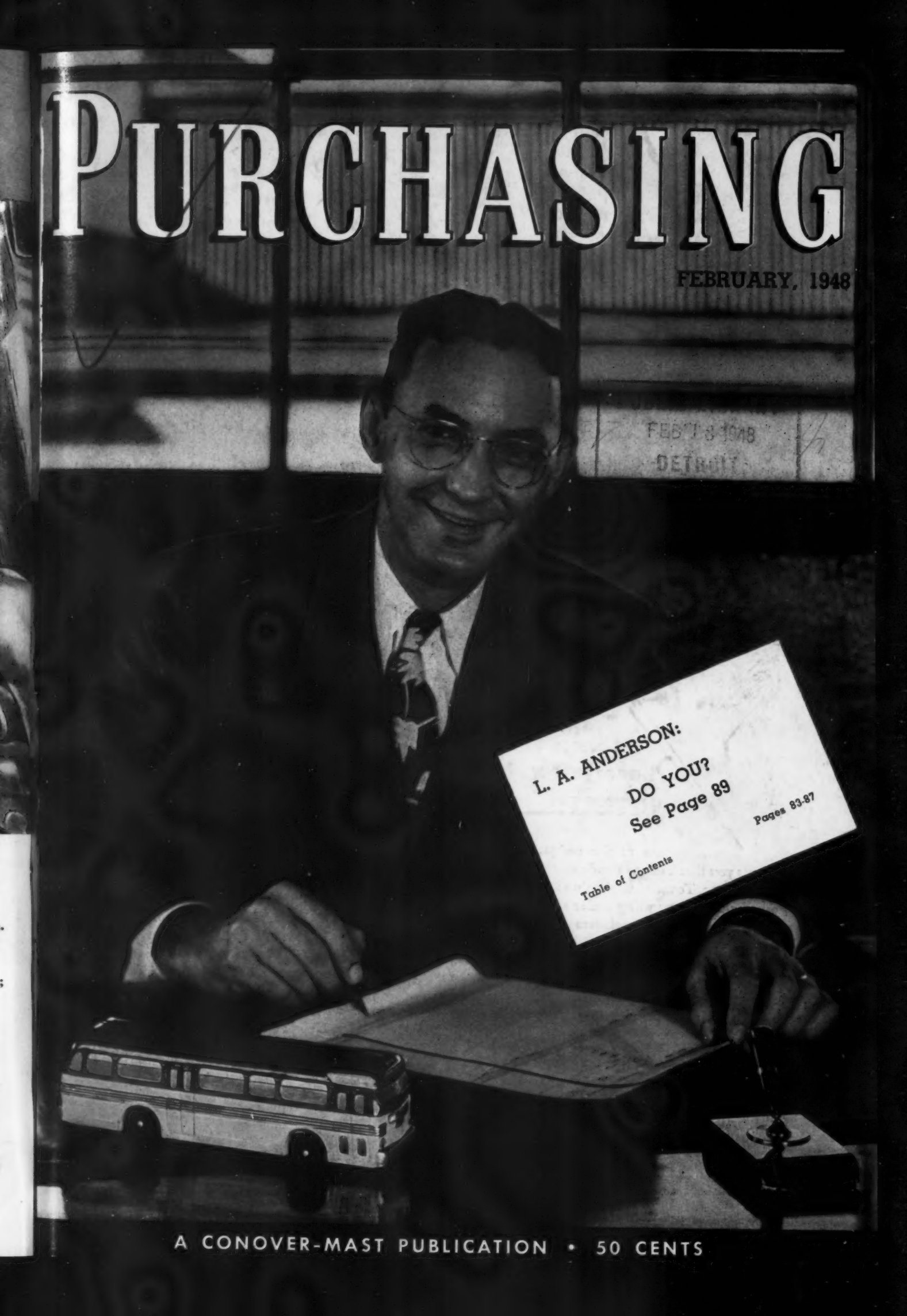
PURCHASING

FEBRUARY, 1948



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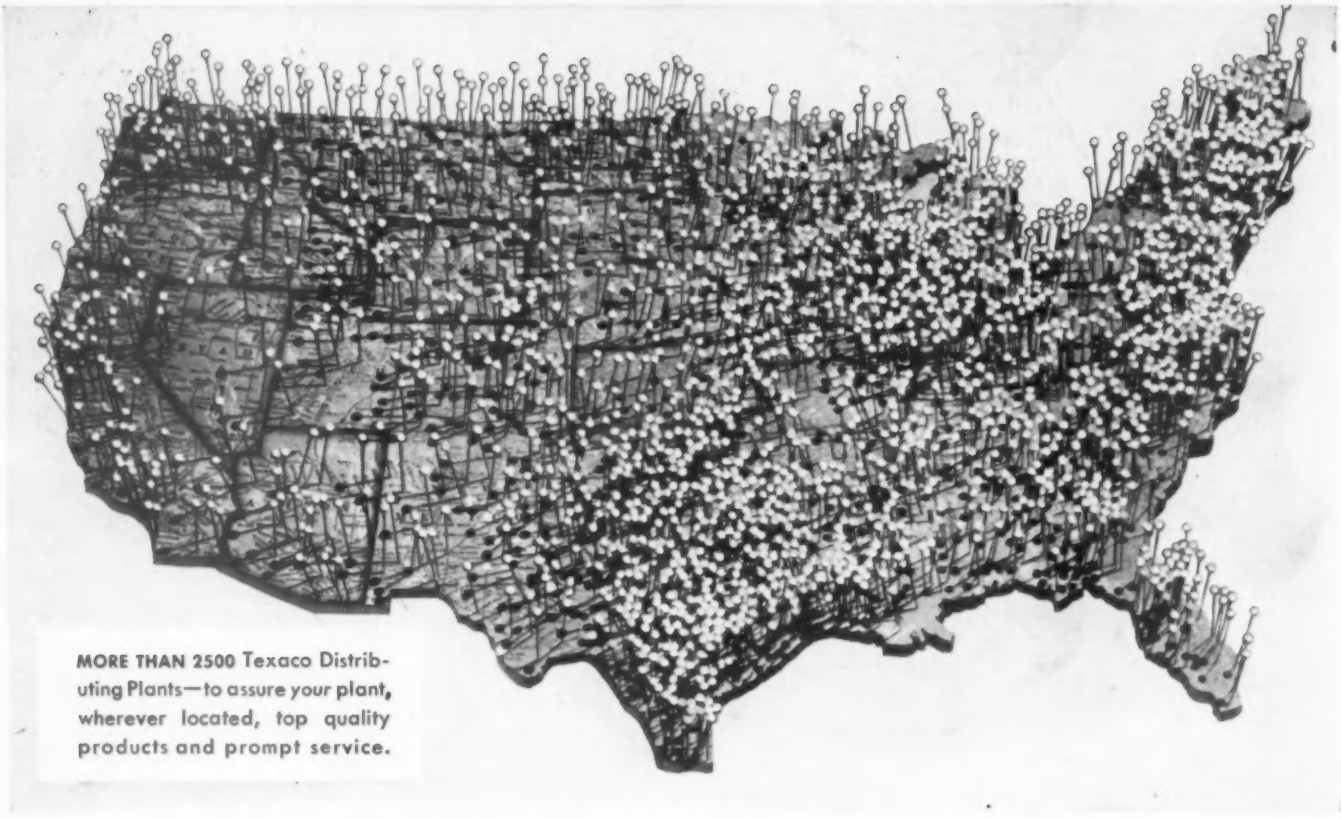

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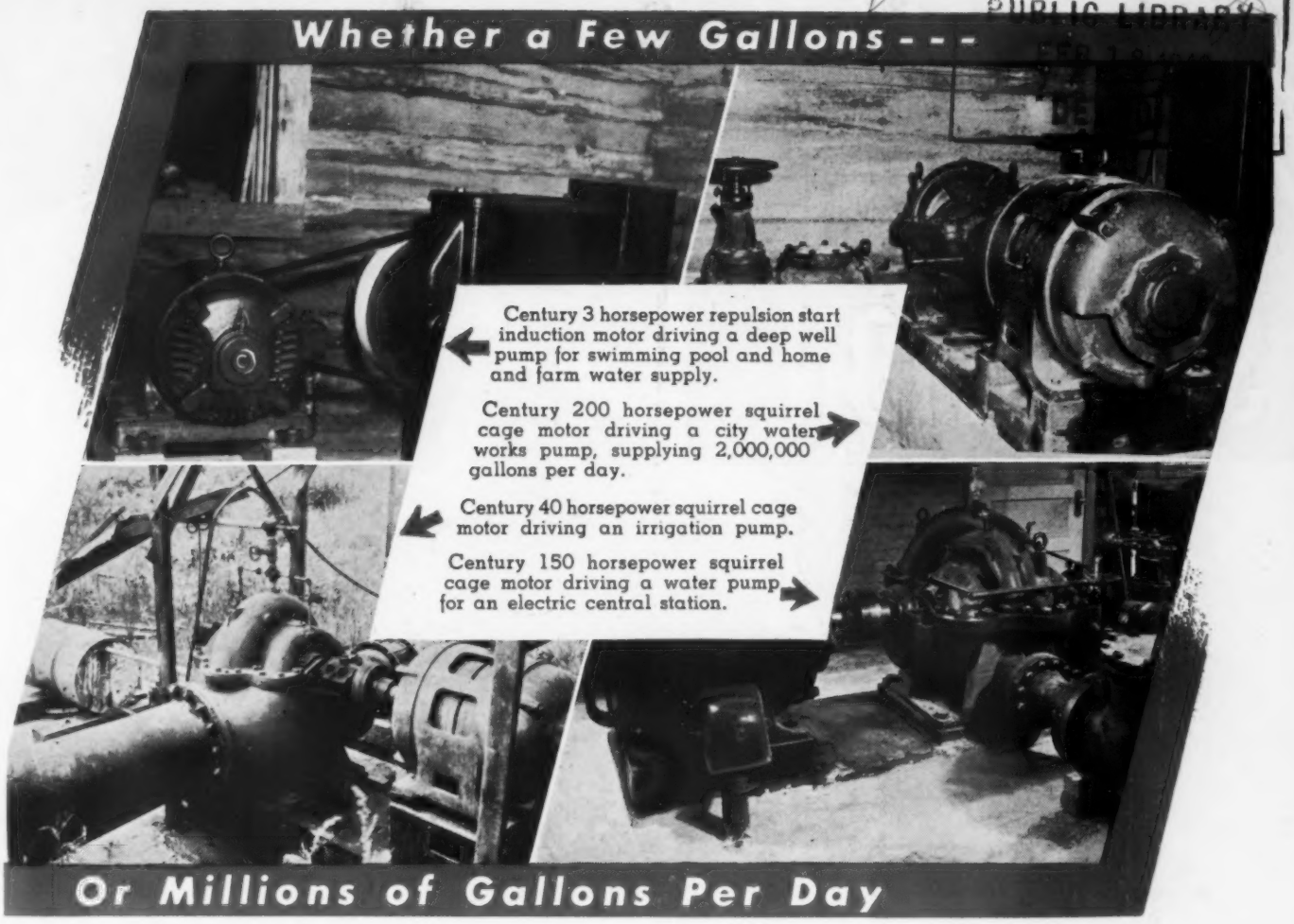
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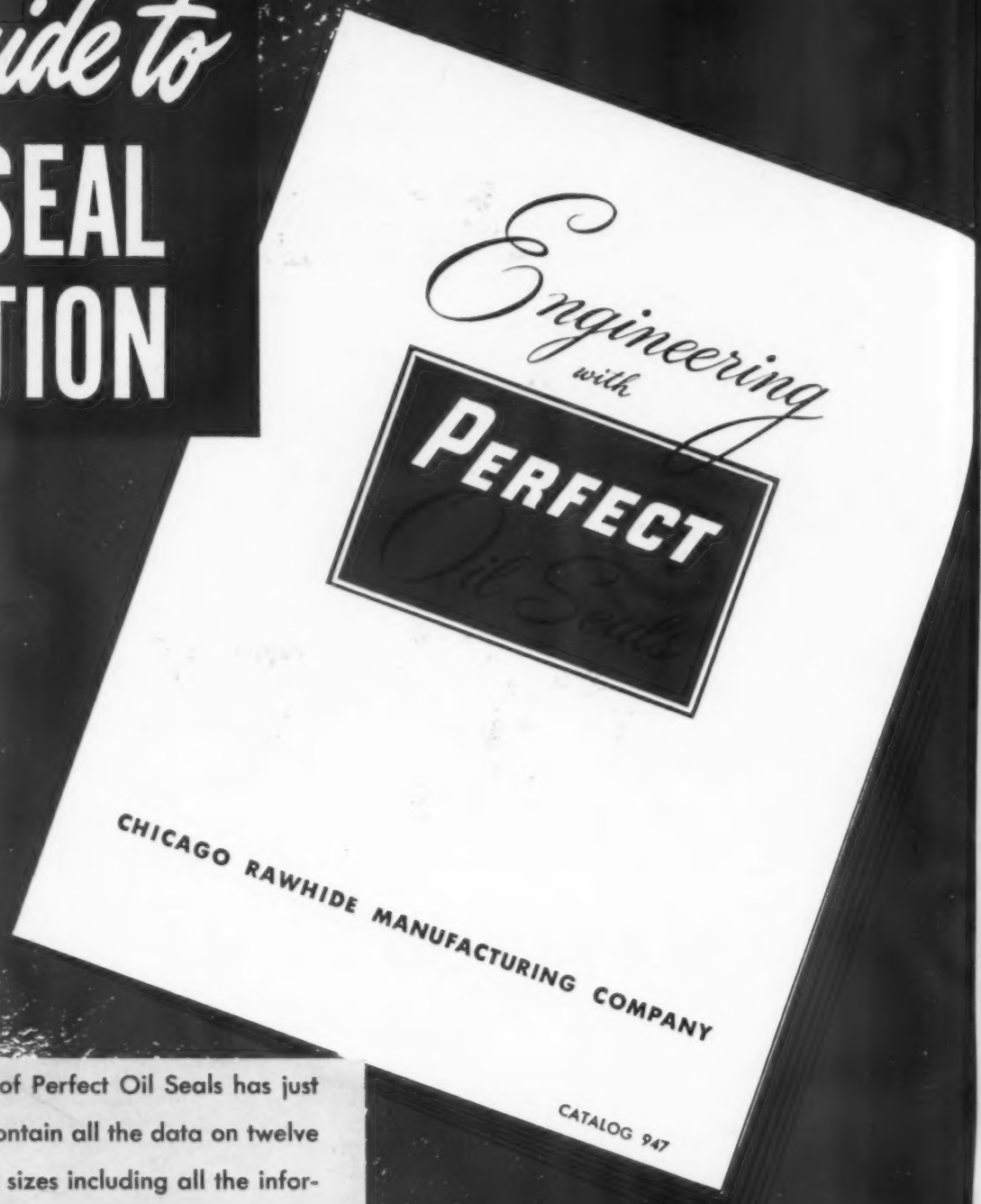

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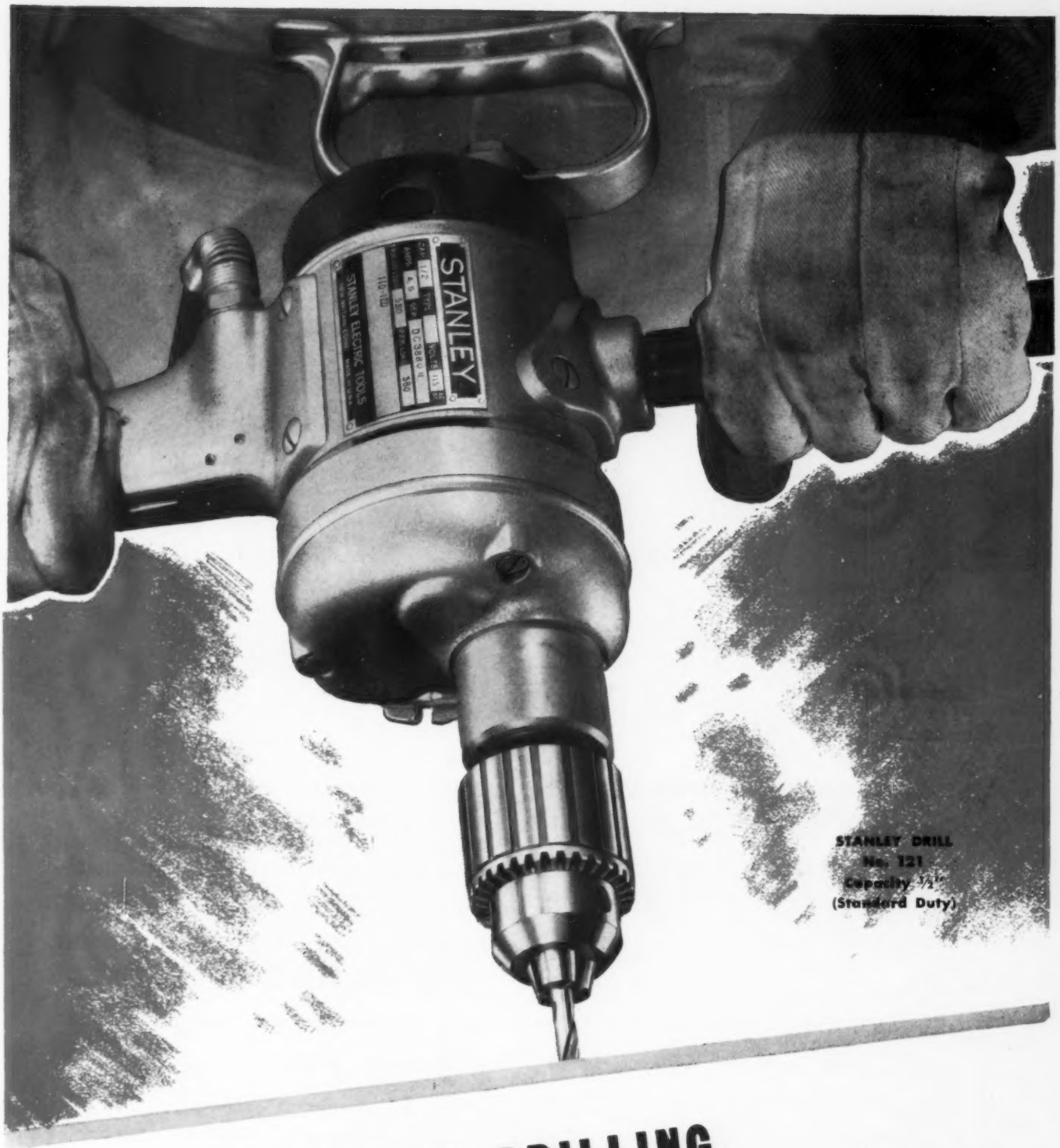

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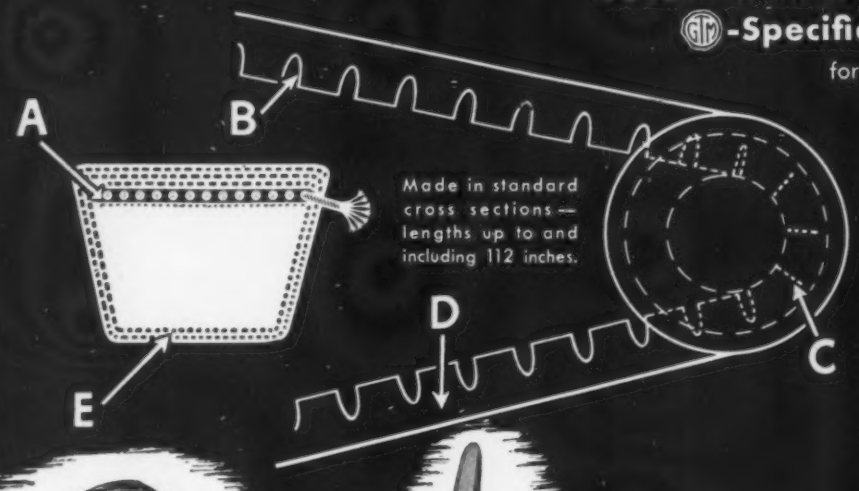

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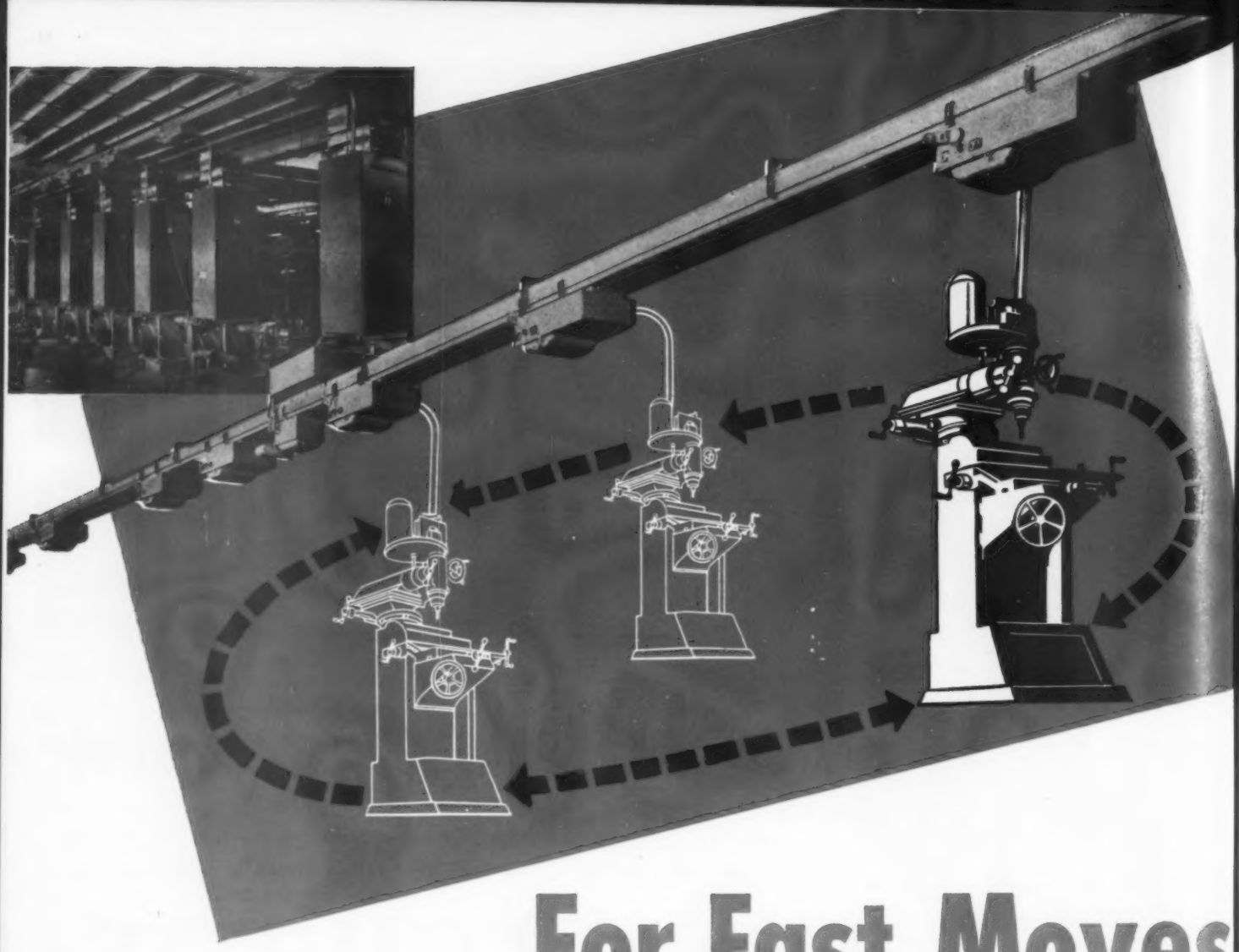

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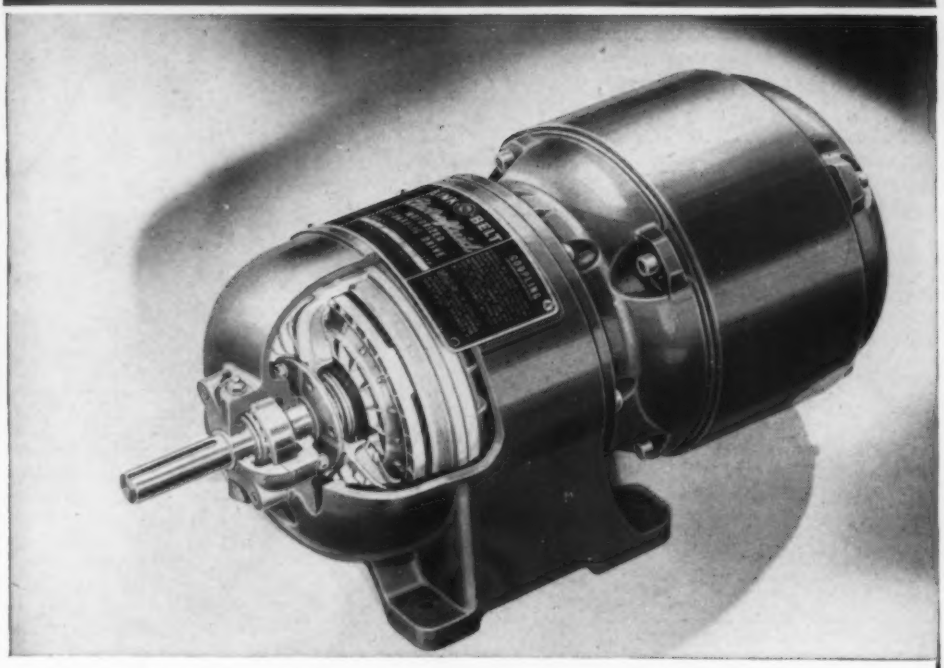

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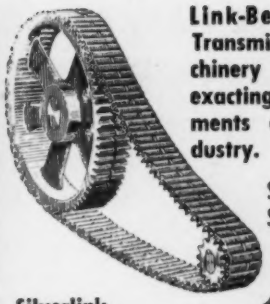

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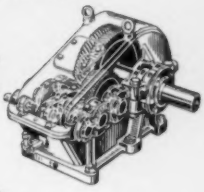
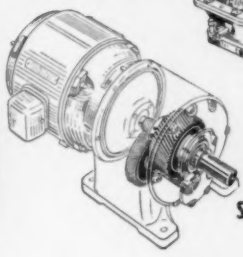
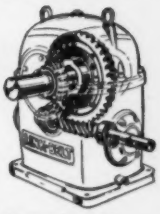


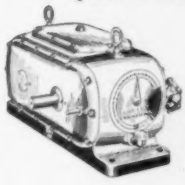
Herringbone Gear Speed Reducers



Motorized Helical Gear Speed Reducers

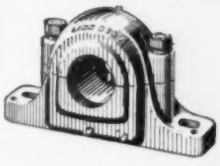


Worm Gear Speed Reducers



PIV Gear Speed Changers

Ball Bearing Mounted Units



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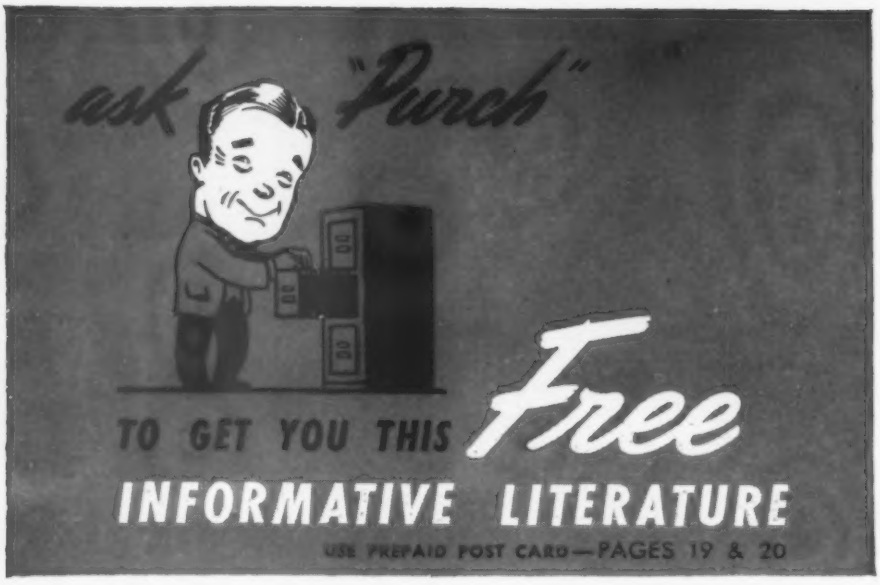

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☐ **8. PALLETS**—Bulletin illustrates various types of pallets—standard, cargo, flyweight, airplane, "Perfect" collapsible rack, box ballet, 4-way, etc. National Pallet Corp.

☐ **9. LIGHTING**—"Over-All Lighting", AIA File 31-F-23, illustrates and describes various types of fluorescent semi-indirect, luminous indirect and hanger lighting units, with specifications and utilization data. F. W. Wakefield Brass Co.

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☐ **12. CONVEYOR**—Bulletin 100 details advantages offered by Flexoveyor, a portable, flexible and reversible power driven conveyor for bags, bales and cartons—operating around curves and turns. E. C. Horne Machinery Co.

☐ **13. INDUSTRIAL TIRES**—Pneumatics and solids, with wide base rims for heavier loads and easier operating. Bulletin describes General industrial tires for low speed mobile units, and higher speed vehicles, also, caster forks. Industrial Tire Divn. General Tire & Rubber Co.

☐ **14. STAINLESS STEEL CASTINGS**—"A Quarter Century of Pioneering" describes the facilities of The Cooper Alloy Foundry Co. for making stainless steel castings from one ounce to two tons, and contains table of Cooper standard alloys—analyses, characteristics and applications.

☐ **15. CUTTING FLUIDS**—"Cutting Fluids for Better Machining" gives information on the selection of cutting fluids, tells how to get the most out of cutting fluids, and gives rules for prolonging tool life and insuring maximum production efficiency. Its 72 pages also include tables on SAE steels, NE steels, and ASI numbers for all SAE steels. D. A. Stuart Oil Co.

☐ **16. CARBONS, RIBBONS, Duplicating**—"Guidebook entitled "The Old Town Counsellor", 40 pages presents broad view of the field of duplicating supplies, from autographic register rolls to woven edge ribbons. It concisely reviews available types of carbon papers, duplicator fluids and papers, inked and carbon ribbons, master units and related subjects. Old Town Ribbon & Carbon Co.

☐ **17. TUBE TOOLS**—Circular tells about "Superior" tools for flaring, swedging and tube cutting. Penn Brass & Copper Co.

☐ **18. CONTOUR SAWING**—"DoAll Contour Saws" is title of revised edition of 416 pages, which describes through photos, charts and drawings the techniques for contour sawing and filing, also high speed sawing, and friction cutting methods with band sawing equipment. Second section contains complete instruction course on contour machining. The DoAll Company.

☐ **19. DRILLING, BORING, TAPPING**—National Automatic Tool Co. has released 68-page book entitled "A Cross Section of Work Performed on Drilling, Boring, Facing and Tapping Machines for the Metal Working Industry," which contains 66 case histories of various parts machined on Natco Equipment. Full page is given to each case history which provides blueprints and detailed explanation of the job.

☐ **20. PACKAGE SEALING**—"Sealing of Corrugated and Solid Fibre Containers" is subject of Booklet by J. D. Malcolmson, revised third edition, available from Robert Gair Co. Contents includes (1) Adhesives—Hand Sealing and Automatic Sealing; (2) Gummed Paper Tape; (3) Metal Stitches and Staples; (4) Metal Straps or Wire. You and your packing department will find this book of prime interest.

☐ **21. SYNCHRONOUS MOTORS**—Bulletin 211 describes synchronous motors from 10 to 1000 hp, made by The Electric Products Co.

☐ **22. VERTICAL GEAR GRINDER**—P&W 26-inch hydraulic vertical gear grinder for spur and helical gears, is subject of 8-page bulletin. The machine provides method of accurately grinding large spur and helical gears at low cost. Pratt & Whitney Divn. Niles-Bement-Pond Co.

☐ **23. BELT CONVEYORS**—Catalog 785 is comprehensive catalog of Jeffrey belt conveyors. It is virtually a handbook on the subject of belt conveyors, freely illustrated.

(Please turn to page 16)

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"KNOW YOUR FILES and CUT COSTS"

• The use of the right file saves materials, the workmen's time, and improves results. Save these advertisements (this is one of a series) . . . they will help you select "The right file for the job."

Subject: FILES FOR STAINLESS STEEL — Prepared by Nicholson File Co.

FILE FOR STAINLESS STEEL

FLAT BASTARD FILE

FILING STAINLESS STEEL

STAINLESS STEEL—A SPECIAL FILING PROBLEM. Stainless steels, now widespread in modern industry, are a group of alloy steels with a very high chromium content. The most common type of stainless steel (known as "18-8"), for example, contains approximately 18% chromium and 8% nickel. This makes it tough and dense, and causes an abrasive action that tends rapidly to wear out the teeth or edges of all cutting tools.

While regular purpose files will cut stainless steel, it is important to find files that will not only do the work *well* but also retain their cutting ability longer against the abrasive action of this dense steel.

SPECIALLY DESIGNED FILE TEETH. Nicholson has perfected a special type of file tooth which has much longer life when used on stainless steel than regular file teeth.

HOW TO FILE STAINLESS STEEL. Stainless steels should be filed with a light pressure and a slow, steady stroke to prevent heating the metal—for it becomes harder as it becomes heated. This makes filing more difficult, and also causes the file's teeth to wear out faster. It is also important to "keep the file cutting," otherwise the surface of the metal becomes glazed and therefore more difficult to file.

Nicholson and Black Diamond Files for stainless steel are made for fast stock removal on thick sections and for smooth filing on narrow sections. They are stamped "For Stainless Steel" and are available in the same shapes, sizes and cuts as regular purpose files. Available through industrial supply houses.

Nicholson makes special-purpose files for Brass, Lead, Aluminum, Stainless Steel, Foundry Castings, Die Castings, Die Making, Lathe Filing, Curved and Shear Tooth Filing—and Swiss Pattern Files of all shapes and sizes.
FREE BOOK—*"FILE FILOSOPHY."*

NICHOLSON FILE CO., 28 Acorn St., Providence 1, Rhode Island
(In Canada, Port Hope, Ont.)

BLACK DIAMOND TRADE MARK

NICHOLSON FILES FOR EVERY PURPOSE

(*Continued from page* 14)

160 pages. It also lists anti-friction idlers and other equipment usually required in belt conveyor applications. The Jeffrey Manufacturing Co.

☐ **24. STAINLESS STEELS Fabrication**—Drawing, Forming, Spinning and Cutting of Armco Stainless Steels is subject of 32-page booklet issued by American Rolling Mill Co. It is a guide book on these respective processes and the selection of the right material therefor. It explains new methods, and also tells about modern methods in blanking and punching, shearing, sawing and torch cutting.

☐ **25. BULK FLOW CONVEYORS**—New 48-page illustrated book No. 2175 describes Link-Belt Bulk-Flo conveyors developed for the mechanical handling of a great variety of bulk flowable granular, crushed, ground or pulverized materials of a non-abrasive, non-corrosive nature. It is self feeding, self discharging and largely self-clearing. It may also be used individually as a feeder, conveyor or elevator. Link-Belt Co.

☐ **26. NYLON ROD & STRIP**—Folder describes Nylon rod and strip—physical properties, fabrication, and recommended uses. Nylon FM 1001 and FM 3001 have melting points of about 505° F and 450° F respectively. The Polymer Corp.

☐ **27. WELDING**—New 12-page Twecolog describes complete line of Tweco welding electrode holders, ground clamps, cable connectors, machine terminals, cable splicers, lugs and carbon holders. It also shows new models. Tweco Products Co.

☐ **28. BLACKBOARDS**—Bulletin illustrates various types of framed blackboards for industrial and commercial uses. Writing surface is guaranteed never to crack, peel, warp or fade. Weber Costello Co.

☐ **29. ARC WELDERS**—36-page, 3-color catalog covers complete line of "Simplified" arc welders which includes electric motor drives DC, gasoline engine driven, and AC transformer type welders, welding generators, gasoline engine driven welders with auxiliary AC or DC power generators, and other models. The Hobart Bros. Co.

☐ **30. REFAX CAST IRON Products**—Melting pots for aluminum and lead, goosenecks for pressure die casting, tilting pots, special shape pots, etc., are subject of bulletin just released by American Car & Foundry Co.

☐ **31. HUMIDIFIERS**—Controlled Humidification with Armstrong steam humidifiers is subject of Bulletin 177. Book explains the need for humidification and how to achieve it. Included is much valuable reference data on humidification requirements for processing and storing a wide variety of materials. Armstrong Machine Works.

☐ **32. MIDGET MILLS**—Bulletin 16-M, 12 pages tells about the Midget Mill Group made by Severance Tool Industries, Inc. The new Micro-Mills listed are said to finish with one or two passes jobs that usually require two or three wheel dressing and multiplied passes per dressing, and are said to be revolutionary in their field. Bulletin also lists ground carbide hand files and ground carbide die machine files.

☐ **33. VALVES**—Condensed Specifications Bulletin, No. 50, 6 pages, facilitates the selection of relief or safety valves. Listing gives all type numbers together with comparison numbers of other commonly used valves. Sizes, pressures and materials are clearly indicated. Sectional line pictures show the various types. Farris Engineering Corp.

☐ **34. LIGHTING**—Troffer Luminaires, Recessed Type TR, is subject of new Westinghouse booklet. This 12-page booklet, B-3959, includes photographs, sketches, schematic diagrams, illumination design data and suggested layouts. Westinghouse Electric Corp.

☐ **35. BOLTS, NUTS, SCREWS**—New catalog, 122 pages, sectionalized for bolts, screws, nuts, stove bolts, wood screws and sheet metal screws, rivets and washers, and miscellaneous, is now available from Sterling Bolt Co. Check for your copy now, and bring your fastener file up to date. 209 W. Jackson Blvd., Chicago, Ill.

☐ **36. ABRASIVES**—Four-page folder gives complete description of Bay State Abrasive Product Company's Bayflex raised hub disc wheels, their uses and advantages. Insert pages give standard ordering quantities, and other data.

☐ **37. THERMOCOUPLE-PYROMETER Accessories**—Bulletin P 1235 covers thermocouples, protection tubes and pyrometer accessories carried in stock by The Bristol Co. It also contains chart and data on selecting the right thermocouple and protection tube.

☐ **38. V-BELTS & SHEAVES**—Catalog leaflets on its Multi-V belts and Magic Grip sheaves used with them, have just been released by the B. F. Goodrich Co. Sheaves leaflet includes table showing pitch diameters and brushing sizes of sheaves carried in stock.

☐ **39. CONTACTING SUB-CONTRACTORS.** Two bulletins put out by the National Industrial Chamber and entitled "The Clearing House for Contract Manufacturing", one with sub-title of "serving manufacturers in every industrial area in the United States" and the other as "specializing in metal, wood, plastics and related services", describe procedure for placing manufacturers in touch with sub-contractors who have available machinery for the job within 48 hours. Fee is paid by seller, not purchaser. Introduces new technique to problems of purchasing and procurement and is cited as aid to purchasing agent.

☐ **40. AIR DRILL HOSE**—Folder describes Monarch and Ajax brands of air drill hose designed for heavy duty service where resistance to hot oils and abrasion is especially important. Hewitt Rubber Divn., Hewitt-Robins Inc.

☐ **41. CUTTING METALS**—No. 2 circular sawing machine for the "fast, low-cost cutting of metals" has been issued by The Motch & Merryweather Machinery Co. In the cutting of bar stock, for instance, machine is said to assure square, clean sections without chattered or burred ends, the last piece being the same as the first.

☐ **42. SPEED REDUCERS**—Catalog 300 describes Speedaire speed reducers made by Cleveland Worm & Gear Co. These fan-cooled worm-gear reducers are said to save space, weight, and operation costs.

☐ **43. HYDRAULIC GRINDER**—Plain Hydraulic Grinder, 6" Type CH, is the subject of bulletin issued by Landis Tool Co. Machine is designed for low cost mass production of small ground parts. Frequently finish grinding of precision parts on this machine eliminates the need of a lapping operation it is claimed. Tolerances are held to as close as .0002".

☐ **44. FLOW METER**—12-page illustrated bulletin, No. 35-83A describes flow meter of the orifice type for indicating, recording and integrating the flow of steam, gas, and air. It gives details of construction and data on orifice plates, etc. American District Steam Co.

☐ **45. WIRED PLUGMOLD**—The plug-in-anywhere wiring system, Wired Plugmold, is covered by bulletin just released by The Wiremold Co. Unwired Plugmold is also illustrated.

☐ **46. HYDRAULIC PRESSES**—12-page bulletin describes various types of presses made by Air-Hydraulics, Inc., their accessories, and uses. Center spread shows 28 jobs done on the presses.

☐ **47. GRINDING WHEEL DRESSERS**—18-page booklet No. DR-480, describes line of diamond impregnated cemented carbide grinding wheel dressers. The dresser uses a number of small diamonds securely held together in a matrix of carbide metal instead of using one large diamond per dresser. Tool is said to make for lower cost, lower maintenance, lower diamond inventory, and to eliminate need for remounting diamonds. Carboloy Co., Inc.

☐ **48. RESISTORS**—Bulletin No. 35 tells about three forms of high current resistors.

(*Please turn to page* 19)

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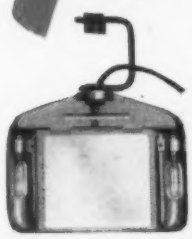
Power TO SHARPEN TOOLS, GRIND AND WIRE-BRUSH METALS



ILLUMINATED EYE SHIELDS combine "flood-light" on work and complete eye protection. Glass is shatter-proof and work is completely illuminated from both sides.

"WHIRLWIND" WIRE WHEEL BRUSHES, designed and built right in our plant, give longer life, better brushing surface.

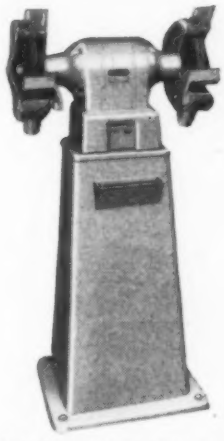
VAN DORN

8" Heavy-Duty Bench Grinder $98.00

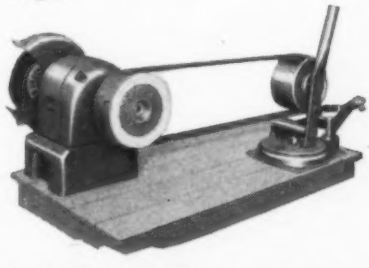
6" Heavy-Duty Model $58.00

10" Model $138.00

(Illuminated eye shields extra)



STREAMLINED PEDESTALS permit spotting these Grinders anywhere in the shop at convenient working height.



BACK-STAND IDLER utilizes abrasive belt grinding for more abrasive surface, maximum grinding speed at all times, faster work at lower cost.

. . . faster than ever before!

We've put famous Van Dorn *power* to work in a completely modern Bench Grinder Line that's setting new highs for better, faster tool sharpening, grinding, wire brushing, buffing, burnishing, polishing and finishing! You'll find feature after feature, that you've always wanted in a Bench Grinder, incorporated in these new models and accessories!

1. Modern, streamlined design improves working clearances, reduces weight.
2. Dependable Van Dorn-built "constant speed" motors maintain correct operating speed.
3. U-shaped tool rests improve tool sharpening support . . . adjustable on strong steel wheel guards.
4. Perforated tool rests and exhaust outlets, connectible to dust-collector, keep working area free of abrasive dust . . . on 8" and 10" Grinders only.

Remember: there's a Bench Grinder exactly suited to your needs in the popular size Van Dorn Line. So ask your nearby Van Dorn Distributor for compete information today. Write for your free copy of our catalog to: The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Maryland.

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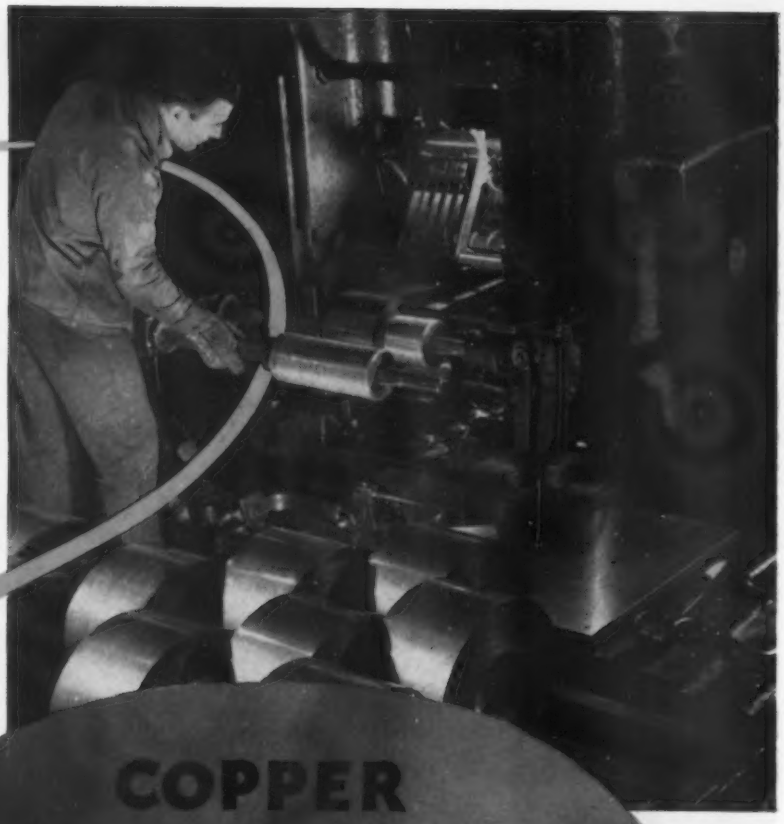
"Van Dorn"

(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS

Coming faster

....still not quite enough



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More Hussey Copper is being made today than at any time in the 100-year history of the product . . . but still not quite enough to fill the demands of all who prefer *Hussey pure Copper.* When you design for lifetime dependability, durability, versatile fabrication and economy—use Hussey Copper, there is a Hussey warehouse near you to service your requirements with utmost accuracy.

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(*Continued from page* 16)

It also contains useful data relating to their resistance values, current carrying capacities, dimensions, methods of mounting, etc. Ward Leonard Electric Co.

☐ **49. WOODWORKING SAWS**—Crosscut, rip, cut-off, planer, mitre, combination, soft-metal, friction and special saws, dado heads and knives are the subject of Bulletin No. 107. Chicago Saw Works.

☐ **50. SPRING COILERS**—Catalog illustrates spring coilers and automatic helical spring and book spiral coiling machines. It tells of the various types and kinds of springs the machines will coil and cut. Features claimed for the machines include economy of operation and accuracy of production. E. A. Samuel Machine Co.

☐ **51. CO_2 INDICATOR**—Bulletin 206 describes the Burrell CO_2 indicator, and kit. Combustion indicator shows the recommended CO_2 range for good combustion of bituminous coal, coke, natural gas, and fuel oil. Burrell Technical Supply Co.

☐ **52. DUST-FUME Eliminator** — The Schmieg Centri-Merge Swirl type dust and fume eliminator is subject of bulletin issued by Schmieg Industries, Inc. Units are available in capacities to handle any air cleaning job—large or small. May be installed singly or in batteries.

☐ **53. AIR COMPRESSORS**—"How to Select an Air Compressor" of the right size and type is the title of a handbook of air compressor data published by the Pneumatic Automotive Equipment Association. A series of charts simplifies determination of air volume, compressed air pressure, and compressor selection.

☐ **54. TRAILER PARTS**—"Safety Engineered Trailer Parts" is title of booklet, featuring Torq-less axles, Bull Dog hitches and parking jacks. Hammer Blow Tool Co.

☐ **55. SANITARY FITTINGS**—Nickel alloy and stainless steel sanitary fittings, valves and tubing are the subject of literature available from the Filter Paper Co. Some 50 different models are illustrated.

☐ **56. AIR CYLINDERS** — Bulletin A-105 gives complete information on air cylinders from 1½" to 14" bores. Single and double rod end non-rotating cylinders are shown with or without cushions, and with choice of standard and many oversize piston rod diameters. Miller Motor Co.

☐ **57. CARBIDE ROTARY FILES**—Twelve-page catalog RF101 illustrates line of high speed and tungsten carbide rotary files. More than 100 of the files are illustrated in actual size. Charles L. Jarvis Co.

☐ **58. METERING OIL VALVE**—Bulletin 707 describes the Hauck Self-Clean metering oil valve designed for use on all makes of oil burners. It is said to be a fuel saver. Hauck Manufacturing Co.

☐ **59. PUMPS**—Four and six stage type TM centrifugal pumps are described and illustrated in Bulletin 241. Pumps have boiler pressure range up to 700 psi and are especially adapted to boiler feed and other services. Warren Steam Pump Co.

☐ **60. INTERNAL FINISHERS**—Abrasive No. 5 AWF internal finisher, a new carbide finishing machine is subject of bulletin issued by Abrasive Machine Tool Co. It is said to grind carbides to extremely high finish and to also permit rapid stock removal.

☐ **61. SANDERS**—Catalog covers portable electric sanders. The Black & Decker Mfg. Co.

☐ **62. FLOOR PLATE**—Super-tough steel flooring, Inland 4-way Floor plate, booklet. Inland Steel Co.

☐ **63. MATERIALS HANDLING** — Electric lift trucks, hand lift trucks, skids, portable elevators, etc., Barrett Junior catalog. Barrett-Cravens Co.

☐ **64. INSULATING PLASTICS**—Bulletin GF 46 gives electrical properties, physical properties, etc., of various high-strength plastics. Continental-Diamond Fibre Co.

☐ **65. MATERIALS HANDLING**—"Industrial Logistics", treatise on materials handling and distribution. The Elwell-Parker Electric Co.

☐ **66. PLASTICS**—"Problems and Solutions in Plastics" New illustrated, full color booklet issued by Plastics Divn., Chemical Dept., General Electric Co.

☐ **67. CORROSION RESISTANT FASTENINGS**—Computer provides rapid means of selecting best non-ferrous or stainless steel alloy fastening to resist any one of numerous conditions causing corrosion. It operates on slide rule principle. The H. M. Harper Co.

☐ **68. TEMPERATURE REGULATORS**—Catalog XO 220 gives full information about Fulton Sylphon temperature regulators which are easy to regulate, quick, and accurate. Fulton Sylphon Divn., Robertshaw-Fulton Controls Co.

☐ **69. BUSHINGS**—Bulletin 145 covers standard centrifugally cast bushing stock in all popular sizes. Shenango-Penn Mold Co.

☐ **70. ELECTRODES**—Ni-Rod instruction booklet describes use of Ni-Rod welding electrodes for repairing fractured machine parts, new castings, etc. The International Nickel Co.

☐ **71. GRAY IRON CASTINGS**—Booklet presents "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings" forming a dense non-porous structure which is uniform throughout. Eaton Mfg. Co., Foundry Divn.

☐ **72. GAUGES**—Folder describes variety of gauges made by United States Gauge, Divn. of American Machine and Metals Inc.

☐ **73. MILLING CUTTERS**—Catalog describes complete line of milling cutters. Brown & Sharpe Mfg. Co.

☐ **74. SCREW MACHINES**—Feed selector gives recommended speeds and feeds on all operations—also gives spindle speeds in surface feet or rpm. Republic Steel Corp.

☐ **75. MOTORS**—Eight-page price list gives prices, weights, dimensions of the most commonly used motors in standard ratings up to 75 hp. Crocker Wheeler Electric Mfg. Co.

☐ **76. WIREBOUND BOXES—CRATES—**

(*Please turn to page* 20)

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(*Continued from page* 19)

Literature describes various types, assembly, and shipping advantages. Wirebound Box Mfg. Assn.

☐ **77. BEARING ALLOYS**—Bearing alloys and their technical features are subject of booklet "Bearing Alloys Technical Manual." Federated Metals Divn.

☐ **78. LABORATORY EQUIPMENT**—Crushers, Rolls, Mills, Grinders, etc., are subject of catalog issued by Sturtevant Mill Co.

☐ **79. ROTARY PUMPS**—Bulletin W-484-B1 describes Worthington GA rotary pumps. Worthington Pump & Machinery Corp.

☐ **80. WIRE SCREEN**—Screen Facts is name of new Roebling Wire Screen Catalog complete with illustrations, descriptions and tables. No. W-903. John A. Roebling's Sons Co.

☐ **81. MOTORS**—Bulletins describes the complete line of Wagner motors. Wagner Electric Corp.

☐ **82. PACKAGING**—Kimpack book on better packaging methods tells about Kimpak Creped Wadding for safe packaging of fragile and delicate merchandise. Creped Wadding Divn., Kimberly Clark Corp.

☐ **83. STEEL STRAPPING**—"Savings in Shipping" is case history booklet about savings and safety in shipping made possible by Acme steel strap. Acme Steel Co.

☐ **84. TAPES**—Bulletin OK 1007 describes Okonite and Manson tapes. The Okonite Co.

☐ **85. STAINLESS STEELS**—Peter A. Frasse & Co. will send you copy of inventory showing stainless steels immediately available.

☐ **86. SURFACE GRINDING**—File sized binder contains reprints of series of articles by Simonds Abrasive Engineers on surface grinding. Simonds Abrasive Co.

☐ **87. PHILLIPS SCREWS**—Reports on assembly savings with Phillips Screws are available from Phillips Screw Mfrs.

☐ **88. HOISTS**—Folder DH 1250 describes Wright Speedway electric hoist. Wright Hoist Divn., American Chain & Cable.

☐ **89. GAGES**—Catalog 26-P describes the Starrett line of precision gages, micrometers, vernier tools, etc. The L. S. Starrett Co.

☐ **90. VALVES**—Valve Reference Book No. 38 is being distributed by Homestead Valve Mfg. Co.

☐ **91. PHOSPHOR BRONZE**—Catalog contains specifications for Seymour Phosphor Bronze which is available in sheet, wire and rod. Seymour Mfg. Co.

☐ **92. SALESMEN'S SAMPLE Cases**—Catalog 110, Fibre Products Mfg. Co.

☐ **93. FASTENERS**—Catalog gives detailed information about the Cleveland high carbon heat treated cap screw and other fasteners. Cleveland Cap Screw Co.

☐ **94. D-C WELDERS**—Bulletin GEA 4852 describes the WD-40 series of heavy-duty industrial welders available in 200-, 300- and 400-ampere ratings. General Electric Co.

☐ **95. PIPE SUPPORTS**—Literature describes Grinnell pipe supports, and contains data helpful in calculating hanger loads. Grinnell Co., Inc.

☐ **96. WOOD SHELVING**—Literature describes Hines Prefab shelves for storerooms and warehouses. Edward Hines Lumber Co.

☐ **97. FIBERGLAS TAPE**—Catalog describes B & B Industrial adhesive tape No. 263. It is made of Fiberglas and can be used under conditions that would burn up ordinary tape. Bauer & Black, Divn. of The Kendall Co.

☐ **98. WELDING FITTINGS**—Seamless Welding Fittings, Catalog Volume 3 contains 112 pages of listings, charts and diagrams. It gives buyers information they need on types, sizes, weights, dimensions to assist in selecting proper fitting. Ladish Co.

☐ **99. SPRINGS**—Accurate Spring Handbook is full of helpful shortcuts for making spring calculations. Accurate Spring Mfg. Co.

☐ **100. FRACTIONAL MOTORS**—Bulletin GEA 3871 describes G-E d-c fractional horsepower motors and generators available for short delivery. General Electric Co., Apparatus Dept.

☐ **101. WORK GLOVES**—Copy of Commercial Standard CS139-47, Work Gloves, will be sent to you by the Work Glove Institute. Buyers of work gloves should have a copy.

☐ **102. VALVES**—Circular No. 82 describes the long life Walworth Bronze Valve 225P which is characterized as "the toughest bronze valve your money can buy." Walworth.

☐ **103. DRILL PRESSES**—Catalog describes Walker Turner Company's drill presses with ten spline spindle, 6-inch spindle travel and wide speed ranges.

☐ **104. LIGHTING CALCULATOR**—Champion Lamp Works offers the New Champion Light Rule, a simplified lighting calculator that is a big aid to planned lighting.

☐ **105. WELDING FITTINGS**—Stainless Steel Welding fittings are the subject of Bulletin S-306 issued by Pittsburgh Piping & Equipment Co.

☐ **106. SHAPER**—Bulletin 547-B describes the Sheldon Vernon No. 8000 12" back geared shaper designed for close tolerance work. Sheldon Machine Co.

☐ **107. WIREWAYS**—"A Wirewa You'll Like" illustrates fittings and contains installation data covering the National Electric Products Corporation's 4 x 4 Wirewa, which provides 16 sq. in. of wireway in protective steel housing.

☐ **108. STORAGE BATTERIES**—Catalog 100 tells about the "Twin Power" Gould battery. Gould Storage Battery Corp.

☐ **109. FOR GREASY FLOORS**—Sample of Sol-Speedi-Dri, absorbent for use on oily, greasy floors will be sent to you by Safety & Maintenance Co., Inc.

☐ **110. EXHAUST FANS**—Folder 478 describes Emerson Electric Manufacturing Company's exhaust fans.

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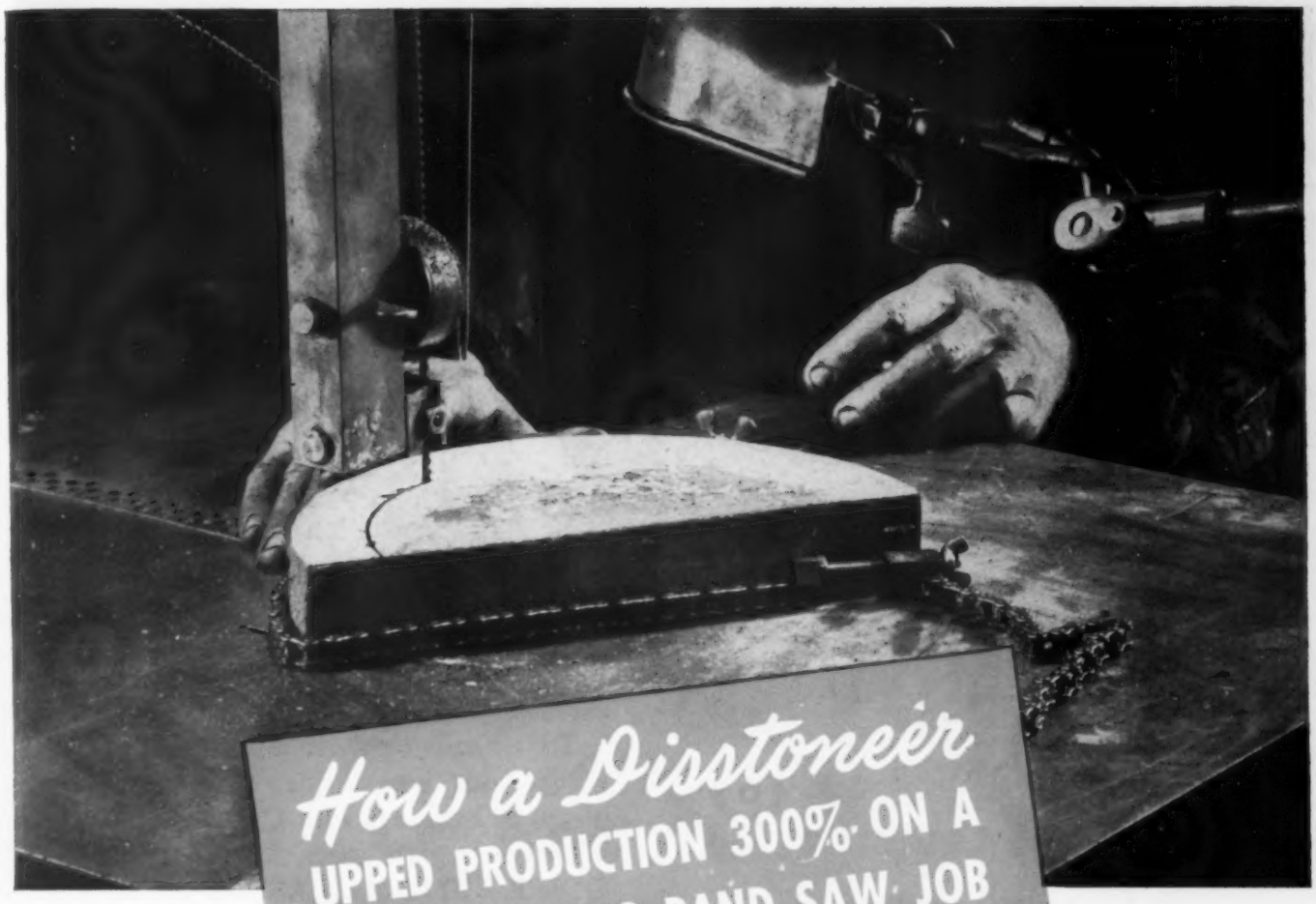

How a Disstoneer UPPED PRODUCTION 300% ON A METAL-CUTTING BAND SAW JOB

Cutting semi-circular units of 1½" boiler plate steel with Disston Hard Edge Flexible Back Band Saw Blade.

The material being cut was 1½" mild boiler plate (5.2 Brinell). Using a ½", 10-tooth blade, it took 1½ hours to saw out a complete unit and only one unit could be cut per blade. Since other operations were performed faster, a bottleneck resulted and highly paid workers were kept idle while waiting for the units to come through.

The Disstoneer* recognized a condition often met before . . . one that is frequently overlooked. The blade in size and number of teeth to the inch was not suited to the work. He recommended a Disston Hard Edge Flexible Back Band Saw Blade of a narrower width and a coarser tooth spacing. It was as simple as that . . . simple to the Disstoneer because he could draw from a long experience with metal-cutting operations of every kind. And the results . . .

Four complete units are now being cut with one blade—2 per hour, three times the production of the discarded blade. Wider tooth spacing provided more gullet room for chip clearance, permitting faster speeds and feeds. The bottleneck was eliminated. The narrower blade made cutting of the radius easier. Production costs and blade costs were reduced.

The Disstoneer may be able to do as much for you. His services are available without cost or obligation.

For further particulars, write direct or get in touch with your local Disston Industrial Distributor.

***DISSTONEER**—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the *right tool* for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—*not only on special work, but on ordinary jobs as well.*

DISSTON METAL CUTTING BAND SAWS

In Types, Patterns, Tempers for All Metals, All Speeds

Regular type, for normal low speed cutting.

Buttress Tooth Pattern, for speeds of 3000 f.p.m. and over.

HARD EDGE FLEXIBLE BACK . . . hardened on tooth edge only. Teeth are milled (not punched) and accurately set by machine. Two types of teeth. All sizes. 100 ft. coils, ⅛" to ½" wide, packed in the handy Disston Safety Reel.

Regular type for normal high speed cutting.

Reinforced type for heavy-duty high speed cutting.

HARDENED THROUGHOUT . . . for high speed cutting of nonferrous metals, plastics and many other materials. Two types of teeth. Also recommended for friction cutting of ferrous metals at speeds of not less than 12,000 f.p.m. All sizes.

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NO SENSIBLE PERSON would burn *money*. Yet every year in the United States over $600,000,000 goes up in smoke.

You are already paying part of this bill in higher insurance rates. Yet you stand to lose much more if fire strikes *you*.

Loss of production time, loss of property that cannot be soon replaced, loss of standing in the business community, loss of life itself—these are losses that can never be repaid.

To guard against such losses, equip your home, car, boat, and place of business with QUICK AID Fire Extinguishers. There is a QUICK AID FIRE GUARD for every fire hazard. Consult your dealer or write for free copy of "Your Fire Protection Insurance Policy."

GENERAL QUICKAID FIRE GUARD

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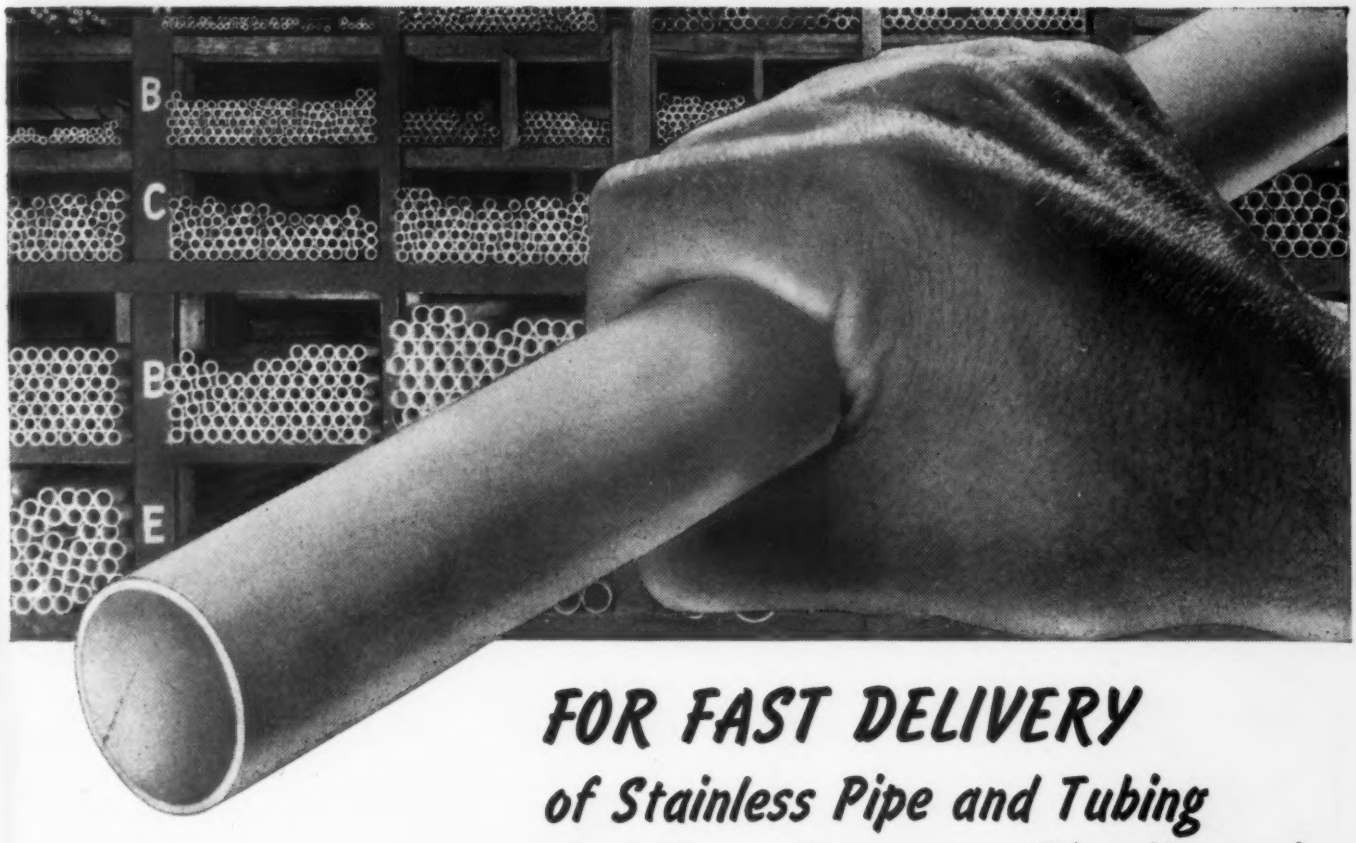

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  Branch Office of
  The Carpenter Steel Company
  Alloy Tube Division—41 Exchange Place
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  Horace T. Potts Co.—Mulberry 8260
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  The Carpenter Steel Company
  Alloy Tube Division—Central 3506
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  Service Steel Co.—Wabash 2750
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  Service Steel Co.—Randolph 9350
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Today *Spongex* is used to reduce vibration and noise in almost every type of machine with moving parts; also for chair cushions, furniture upholstery, shoe innersoles, typewriter pads, weather stripping, pipe insulation, refrigerator and automobile door seals — an infinite variety of things. And tomorrow there will be still more.

Made by a company which has specialized for 25 years in the production of cellular rubber products, *Spongex* is an amazingly versatile material that is solving one problem after another for keen-visioned manufacturers.

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Brand NEW for '48

FORD Bonus* Built TRUCKS

BUILT STRONGER TO LAST LONGER

New all through!

NEW ENGINES! Brand new Six, two new V-8's... up to 145 h.p.

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NEW FRAMES! Tougher, more rugged than ever!

NEW BIG JOBS! Biggest Ford Trucks ever... up to 21,500 lbs. G.V.W.

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Bonus* Built—THE AMAZING RESULT OF AN ENGINEERING PRINCIPLE THAT ASSURES LONGER TRUCK LIFE... and ONLY Ford Trucks Have It!

The great new Ford Trucks for '48 are revolutionary not only because they are *new all through* but because they are the amazing result of a time-proved truck engineering principle. This principle is Ford Bonus Built construction.

Bonus Built=Extra Strength! Every single one of the great new Ford Trucks for '48 is Bonus Built... designed and built with a margin of *extra strength* in every vital part. But that is only *part* of this vital truck building principle...

Bonus Built=Work Reserves! This *extra strength* provides WORK RESERVES that pay off for truck operators in two important, money-saving ways...

Bonus Built=Greater Range of Use! These Bonus Built WORK RESERVES give Ford Trucks a *greater range of use* by permitting them to handle loads beyond the normal call of duty! That means that Ford Trucks are *not* limited to doing only one single, one specific job!

Bonus Built=Longer Life! What's more, these same WORK RESERVES allow Ford Trucks to relax on the job... to do their jobs easier, with less strain and less wear. Thus, Ford Bonus Built Trucks last *longer* because they are built to work *easier!*

See the great new line of Ford Bonus Built Trucks for '48 now!

***BONUS:** "Something given in addition to what is usual or strictly due."—Webster's Dictionary*

LIFE INSURANCE EXPERTS PROVE... FORD TRUCKS LAST UP TO 19.6% LONGER!

COLD HEADED "SPECIALS"

for Special Fastening Jobs

HERE are a few of the many "special" headed and threaded fasteners produced by "National" to solve special fastening problems. Made by the cold headed, upset process, these parts are stronger and more economical than when produced by other methods. "National's" engineers have designed special fasteners for a wide range of industry. The group above represents parts for automotive vehicles, refrigeration, tool manufacturers, metal furniture, lighting fixtures—even prefabricated houses.

If you need a special fastener to fit the products you are making, write us. Our engineering and manufacturing departments may be able to design and make it for you, and save you money.

National
PRODUCTS

THE NATIONAL SCREW & MFG. COMPANY, CLEVELAND 4, OHIO

REPLACE WITH GL-5545's!
. . It's the watchword among users of motor-control tubes who've found that G.E.'s new gas-filled thyratron has a much longer service life.
"EXTRA-GENEROUS CHARGE OF GAS LEAVES PLENTY IN RESERVE DESPITE 'CLEAN-UP' FROM ANODE ABSORPTION."

GOOD NEWS for those who want more hours of dependable tube performance! General Electric's GL-5545 thyratron *serves longer* in motor-control work . . . because of the oversize charge of gas. This compensates for anode gas absorption, caused by the inductive load—large or small—found in both field and armature-control circuits.

Your lathes, grinders, machine tools—your presses, looms, or other d-c-motor-driven equipment—these will operate with less interruption, *more profitably,* if GL-5545's are on the job. No need for new circuits or sockets . . . GL-5545's are interchangeable with your present C6J's or 306's.

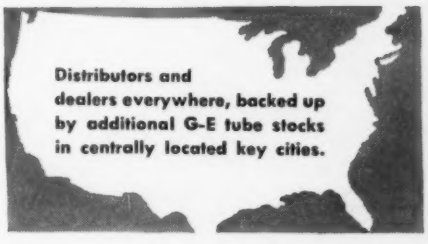
The same ease of replacement holds good in welder-control work. GL-5545's will do the job—with a higher voltage rating as one plus-factor, and vibration-resisting *strength* as another. Internally braced, with the grid-anode structure rigidly supported both at top and bottom, no thyratron is better built to withstand shocks!

Your nearby G-E tube distributor or dealer will be glad to give you full information, including the economical price. He can make spot delivery of GL-5545's; is anxious to serve your needs promptly and well. Phone him today! *Electronics Department, General Electric Company, Schenectady 5, N. Y.*

GL-5545 RATINGS

Filament voltage	2.5 v
current	21 amp
Peak anode voltage, forward and inverse	1,500 v
Peak cathode current	80 amp
Avg cathode current	6.4 amp
Current averaging time	15 sec
Ambient temp range	—55 to +75 C

Write for Booklet ET-122, telling about thyratrons: their design, functions, and applications in industry.



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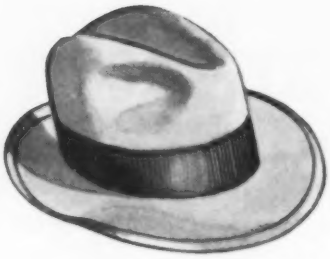
SEVEN HEADS ARE BETTER THAN ONE.....



. . . . especially when it's *your* spring those heads are concentrating on. Whether it's a matter of material, design, method of manufacture or deliveries, it's to your advantage to know that the best skills in the craft are instantly ready for group consultation and action.

Make these plants your partners in mechanical progress.

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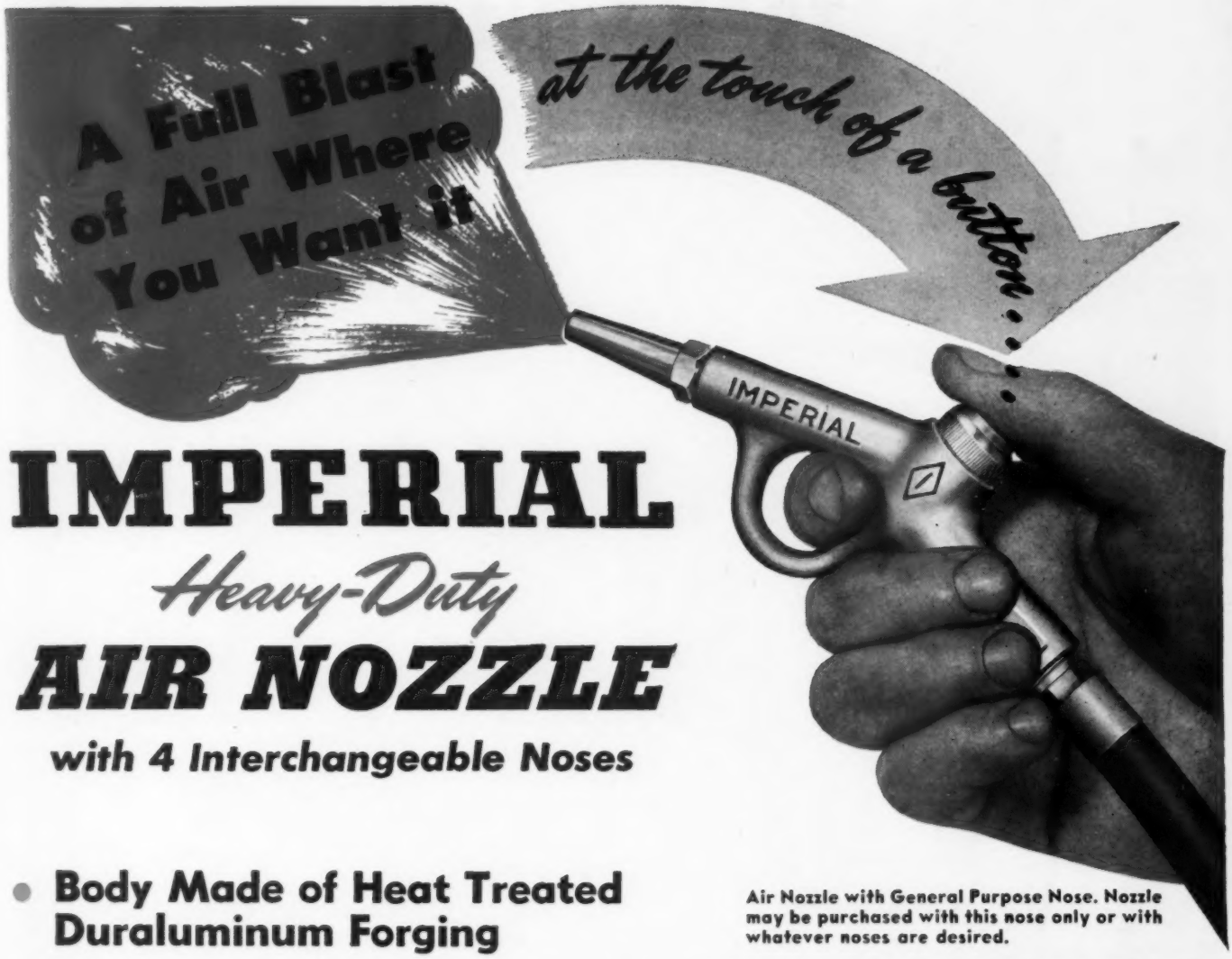

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Air Nozzle with General Purpose Nose. Nozzle may be purchased with this nose only or with whatever noses are desired.

- **Body Made of Heat Treated Duraluminum Forging**
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- **Light—For Ease in Handling**
- **Pistol Grip Fits the Hand**

For hard use and long life in machine shops, steel mills, foundries, forging plants, factories in general, garages, repair shops and wherever a blast of air is needed at the touch of a button. Various noses for handling all types of jobs. Neoprene washer. Self-cleaning seat. For all air lines. Has ¼" female I.P.T.

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LONG NOSE
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WIDE, FLAT NOSE
IMPERIAL
BODY
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TRENT, INC.

OF PHILADELPHIA, PA.

... jumped production from 1000 to 2000 units per day

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PROBLEM: To speed up Trent's low temperature brazing operation. This operation involved the brazing of a 1-inch OD x 10 inch long copper tube set in a square cast brass base. The top of the tube was capped off with a small copper disc. Present manual methods were slow and resulted in a high rejection rate.

SOLUTION: We recommended building an automatic brazing machine to fit their particular operation. By using this machine, both joints were brazed simultaneously, the Trent Company jumped production from 1000 to 2000 units per day and rejections dropped 60%. The machine was designed to accept almost all of their large production brazing jobs with speeds being variable to allow for a full range of heating requirements.

Wm E Johnson
Airco Technical Representative

Airco's Technical Sales Division is at the call of all industry in applying Airco processes and products in the solution of their problems. If you have a metal working problem, ask to have a Technical Sales Division man call. Address: Dept. PR-7905, Air Reduction, 60 East 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas.

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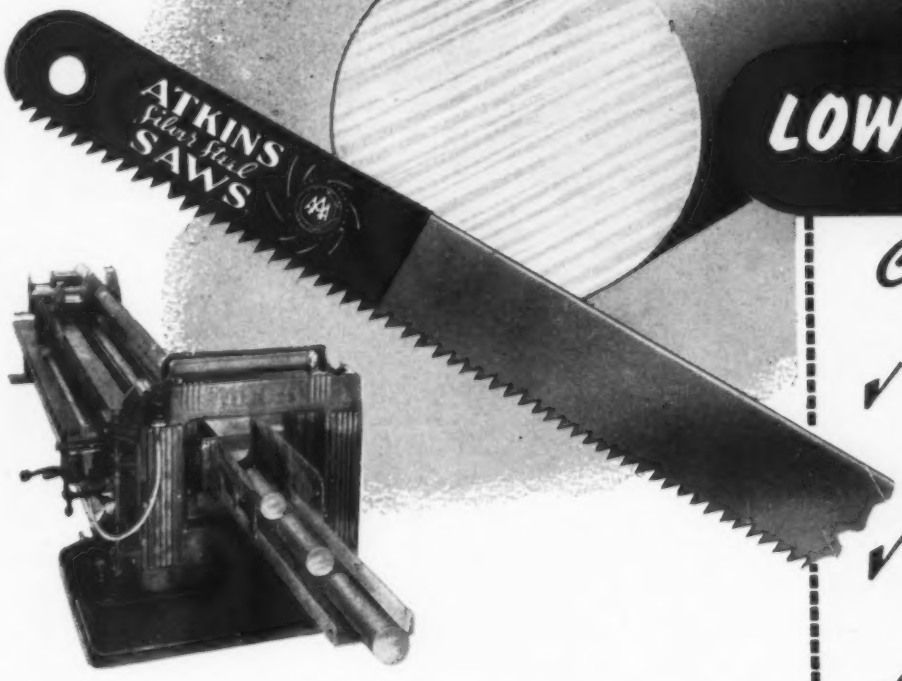
Silver Steel BLADES

MORE CUTS PER BLADE

LOWER COST PER CUT



Atkins "Silver Steel" Blades in your hacksaw machines mean faster metal cutting at lower cost. Because of famous Atkins "Silver Steel," these blades hold their extra-keen tooth-edge longer. How this pays off in more cuts per blade, lower cost per cut and less time lost in blade changing is illustrated in the reports at right.

To see how you can speed your own production . . . cut your down-time . . . save your dollars . . . check with your distributor today. Ask him to have an Atkins Cutting Engineer arrange an actual demonstration on work of your own choice.

Check THESE TYPICAL CUTTING REPORTS

✓ **160 CUTS**
Atkins "Silver Steel" Blade made 160 cuts through 6" diam. S.A.E. X1335 (approximately 4512 sq. ins.) Blade still good.

✓ **4270 SQUARE INCHES**
After cutting 4270 sq. ins. of S.A.E. X1335 Atkins Blade still good for more.

✓ **32 CUTS**
Atkins Blade made 32 cuts through 4" dia. stainless steel (Type No. 303) at average 12" per cut.

✓ **610 CUTS**
After 610 cuts on 3" S.A.E. X1335 Atkins Blade in good condition.

✓ **165 CUTS**
After 165 cuts through 6" diam. S.A.E. X1335 Atkins Blade in good condition.

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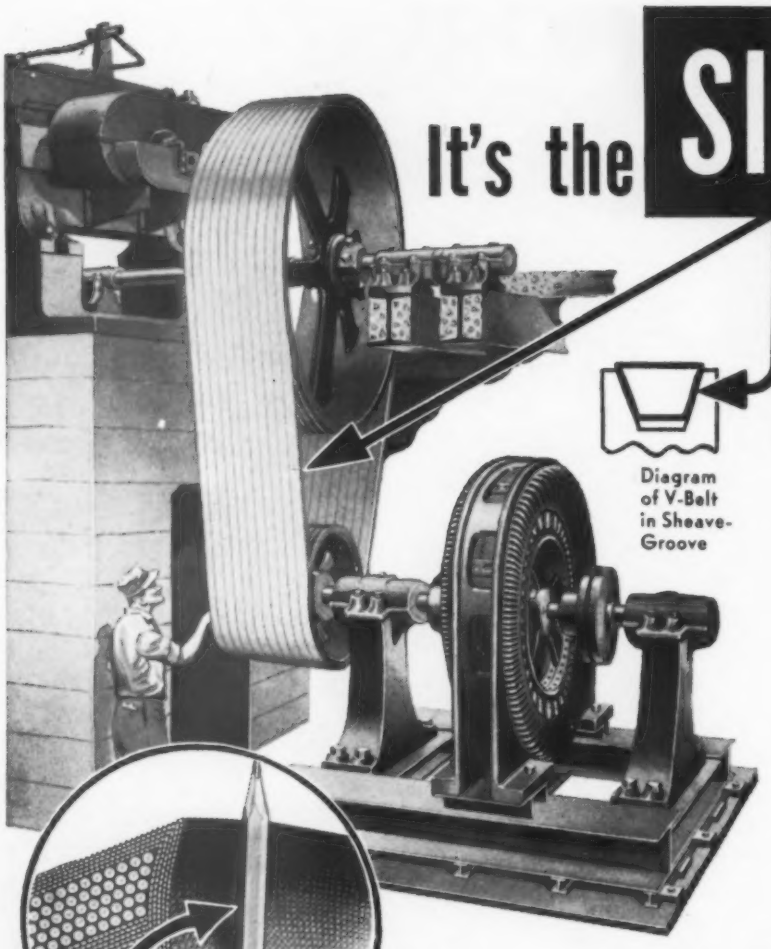
MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB

Power and Hand Blades | Milling Saws | Slitting Saws | Segmental Cold Saws | Metal Cutting Bands



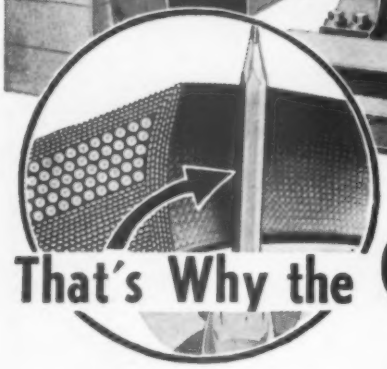
It's the SIDES of a V-Belt

that GRIP the Pulley Pick-Up the LOAD and Really Get the WEAR!

Diagram of V-Belt in Sheave-Groove

Every ounce of load a V-Belt carries must first be picked up by the sides of the belt. Clearly so, because only the sides come into contact with the pulley! The sides do all the GRIPPING on the pulley. The sides pick up the load. They transmit that load to the belt as a whole. And then, once more, the sides—and the sides alone—grip the driven pulley and deliver the power to it. Finally, the sides get ALL THE WEAR against the sheave-groove wall.

That is why you have always noticed that the sidewall of the ordinary V-Belt is the part that wears out first.



That's Why the Concave Side

(A GATES PATENT)

IS IMPORTANT TO YOU!

Clearly, since the sidewall is the part that wears out first, anything that prolongs the life of the sidewall will lengthen the life of the belt—and that's why the patented Concave Side is important to you.

The simple diagrams on the right show exactly why the ordinary, straight-sided V-Belt gets excessive wear along the middle of the sides. They show also why the Patented Concave Side greatly reduces sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

and the CONCAVE SIDE is more important NOW than ever before

Now that Gates SPECIALIZED Research has resulted in Super Vulco Ropes capable of carrying much heavier loads—fully 40% higher horsepower ratings—the sidewall of the belt is called upon to do even more work in transmitting these heavier loads to the pulley. Naturally, with heavier loading on the sidewall, the life-prolonging Concave Side is more important now than ever before!

Fig. 1
Straight Sided V-Belt
Fig. 1-A
How Straight Sided V-Belt Bulges When Bending Around Its Pulley
You can actually feel the bulging of a Straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.
Fig. 2
Gates V-Belt with Patented Concave Sidewall
Fig. 2-A
Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt is Bending Over Pulley.
No bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

Gates

The Mark of SPECIALIZED Research

482

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U. S. and 71 Foreign Countries

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"The World's Largest Makers of V-Belts"

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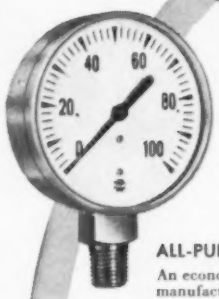
An instrument of test gauge accuracy, designed for many years of service in heavy-duty industrial installations. Withstands excessive vibration and pulsation and provides a safe positive check on process control.

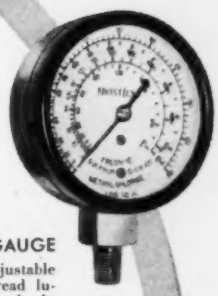
ULTRAGAUGE

A superior quality gauge of top-most accuracy and durability, designed especially for chemical and oil refinery applications. Furnished in 4½", 6", 8½", 12" and 16" dial sizes . . . from vacuum up to 100,000 pounds per square inch pressures.



ALL-PURPOSE PRESSURE GAUGE

An economically priced pressure gauge manufactured to commercial accuracy. It has a phosphor bronze bourdon tube and a corrosion-resistant movement. It's smart in appearance and dependable in performance.



REFRIGERATION GAUGE

Important features include: adjustable hub pointer, broad easy-to-read luminous dial, removable screw check. Low side gauge has 1" and 1 lb. graduation and is protected to 200 lbs. overpressure. Also available with external calibrator and retarded movement.

U.S. INSTRUMENTS Tell The Truth

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USG

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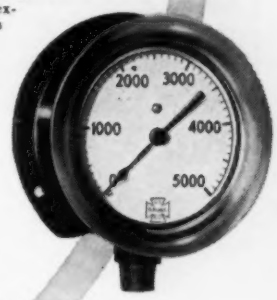
Clean-Out Type

Designed for service in chemical and processing plants for use on heavy viscous fluids that tend to clog. Supplied with precious metal diaphragms and assemblies for highly corrosive chemical application. Diaphragm is easily removed for cleaning.

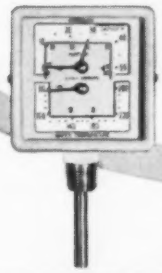
HYDRAULIC GAUGE

A gauge built to give continuing and accurate measurement of hydraulic pressures. The extra heavy-duty movement is designed to withstand the severe shocks and rugged service required of gauges when installed on hydraulic presses and Diesel engines.



BOILER GAUGE

For use on hot water heating systems. Indicates on one dial: water temperature, head of water above gauge and pressure in system. Rugged construction with easy-to-read dial. Available in round or square case.



WELDING GAUGE

This well designed gauge incorporates the safety blow-out features in the low as well as the high pressures. It is especially designed to withstand rugged handling. It is a tough gauge for a tough job.

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UNITED STATES GAUGE

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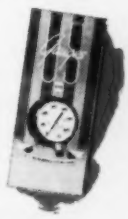

UNITED STATES GAUGE

DIVISION OF AMERICAN MACHINE AND METALS, INC.

SELLERSVILLE 25, PA.

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Company _____

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Rollway Right-Angle-Loaded Bearings split all loads into pure thrust and pure radial . . . and carry each load at right angle to the roller axis. Hence, compound loads, oblique loads and their resultants do not bear upon one bearing alone.

This prevents wedging of rollers and pinch-out. Reduces roller end-rub, wear-back and rubbing friction. Cuts risk of shut-downs . . . cuts cost of maintenance and replacements.

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A new brochure is available containing specifications and general information on many of the Celanese organic chemicals. Write for your copy—and call on Celanese whenever you need technical assistance regarding organics.

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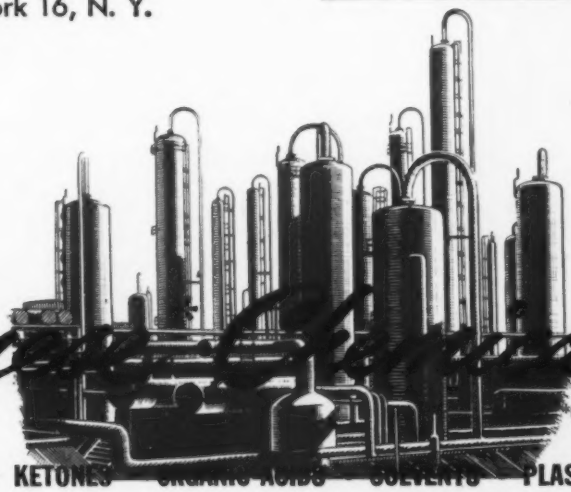
iso-Propyl Alcohol

Celanese iso-Propyl Alcohol, produced in tank car quantities, is a Technical Grade alcohol possessing an exceptionally pleasant odor. This unusual characteristic suggests wide application as a chemical intermediate, solvent, extractant, diluent and for conversion to its respective esters. In addition, its low freezing point characteristics have fully established its use as an anti-freeze.



Celanese Chemicals

*Reg. U. S. Pat. Off.

ALCOHOLS • ALDEHYDES • GLYCOLS • KETONES — ORGANIC ACIDS — SOLVENTS — PLASTICIZERS • INTERMEDIATES

TO hold parts rigidly in place—and to provide for quick, easy adjustment—makers of farm equipment and other machinery manufacturers specify "Ferry Cap Set Screws."

These set screws are case hardened—the hard point *bites in* and *holds*. They fit perfectly and respond readily to adjustment needs.

"Ferry Cap Set Screws" are expertly made by the first company to produce Cup Point Set Screws by the cold upset process of manufacture. They embody the skill and experience gained in 38 years of precision manufacturing.

Square head and headless—cup and oval point—case hardened—sizes ¼" diameter and larger. Carried in stock for immediate shipment.

The FERRY CAP & SET SCREW Co.

2165 SCRANTON ROAD Dept. A-14 CLEVELAND 13, OHIO

EXPORT MANAGER: ERNEST W. LENZ, 280 BROADWAY, NEW YORK 7, N. Y.

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

EATON PERMANENT MOLD GRAY IRON CASTINGS

Find Many Applications in Electrical Manufacturing

For the vast number of applications in the field that might be classified as "electrical manufacturing," Eaton Permanent Mold Gray Iron Castings offer an ideal combination of characteristics. Motor housings, sheaves, vee-belt pulleys, bearing housings—these are just a beginning of an almost endless list of applications in which Eaton Permanent Mold Gray Iron Castings are adding to efficiency, long life, and trouble-free operation.

Specific characteristics of Eaton Permanent Mold Gray Iron Castings include high tensile strength, a dense non-porous structure which is uniform throughout the casting, ability to take a high surface finish, and freedom from segregation. Proper annealing assures freedom from growth or distortion after machining. Free machinability makes for fast uninterrupted machining and a high percentage of perfect parts.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product.

Send for your copy of the illustrated booklet, *"A Quick Picture of the Eaton Permanent Mold Process for producing Gray Iron Castings."*

THE EATON PERMANENT MOLD MACHINE IS A SYMBOL OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED BY THE PERMANENT MOLD PROCESS.

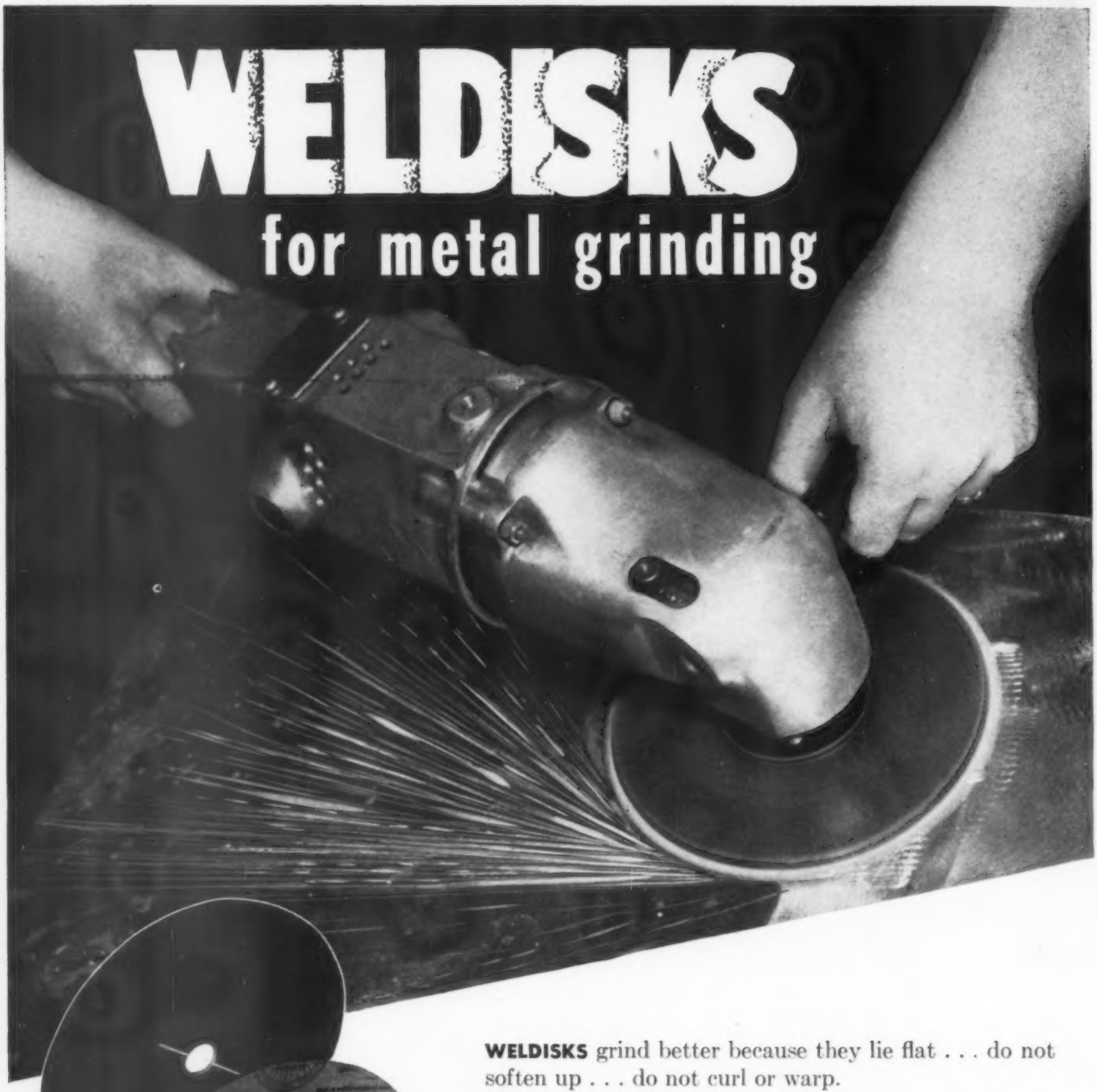
EATON

MANUFACTURING COMPANY

FOUNDRY DIVISION

9771 French Road Detroit 13, Michigan

WELDISKS
for metal grinding



WELDISKS grind better because they lie flat . . . do not soften up . . . do not curl or warp.

WELDISKS last longer, thereby reducing costs, because unlike ordinary disks, their amazing cold-setting cement (a scientific formula — not glue or resin) actually improves with age!

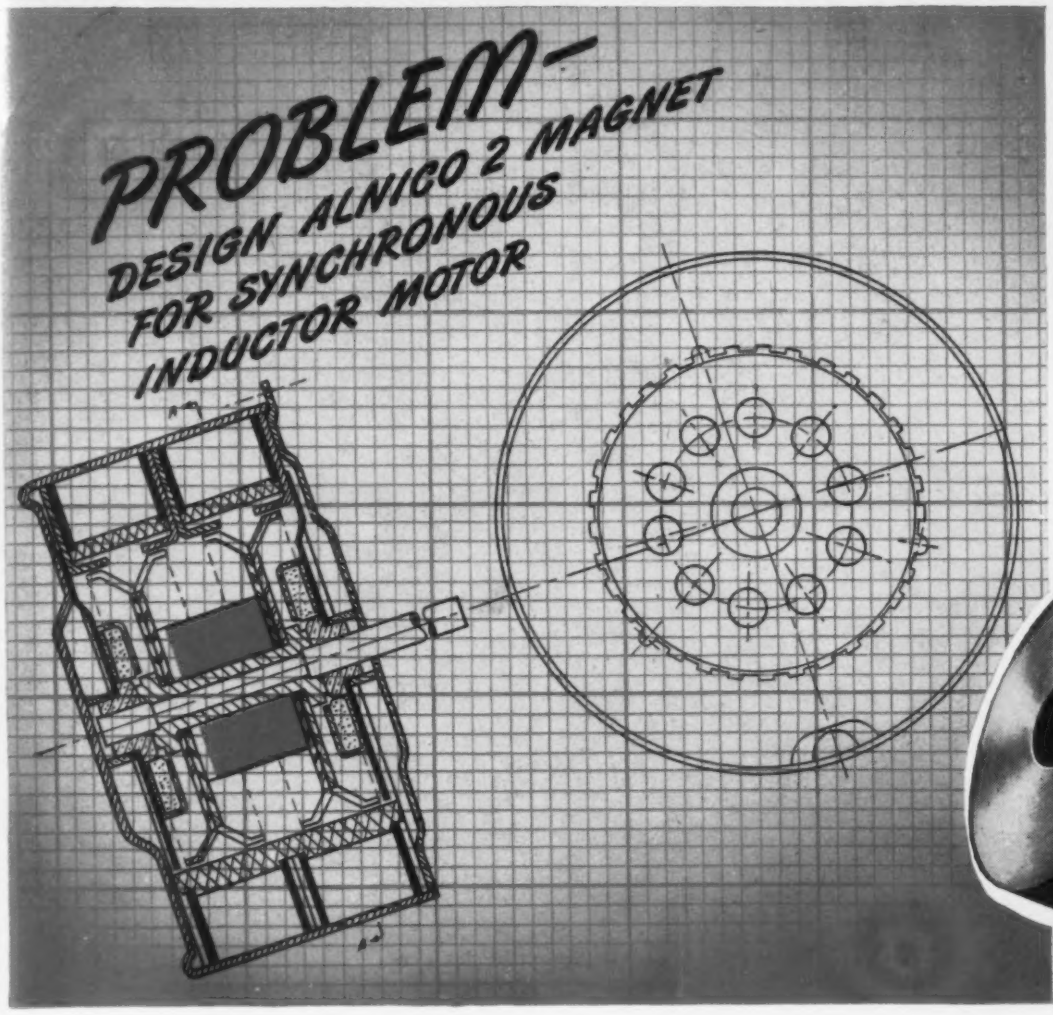
WELDISKS are better disks. Prove it to yourself! Write for a free sample. State size of disk, grade of grit, and brief description of work to be done. A WELDISK will be sent promptly without obligation to you. Abrasive Products, 523 Pearl St., South Braintree 85, Mass.

ABRASIVE PRODUCTS, INC. JEWEL ABRASIVES SOUTH BRAINTREE, MASS. U.S.A.

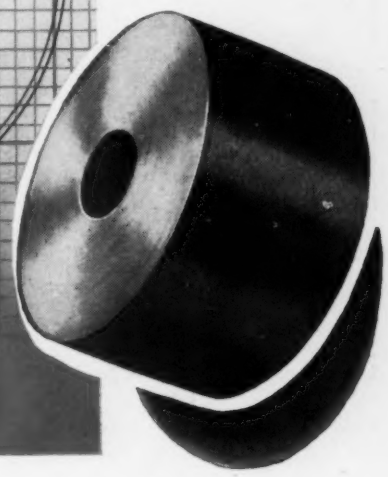
Abrasive Products, Inc.

SOUTH BRAINTREE 85, MASSACHUSETTS · MAKERS OF JEWEL COATED ABRASIVES

YOU GET QUALITY PLUS ENGINEERING SERVICE WITH G-E PERMANENT MAGNETS



Another application for one of the many G-E permanent magnet materials is the synchronous inductor motor designed by General Electric's Fractional Horsepower Motor Divisions. Outstanding features are self-start, low-speed and high torque.



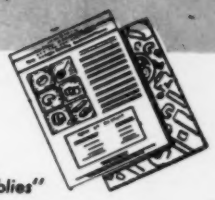
The Magnet that Governs Time

Used widely in industrial timing applications such as traffic signals, motor-operated valves and recording instruments, the G-E self-starting synchronous inductor motor derives its d-c excitation from an ALNICO permanent magnet within the rotor structure. Available in fractional-horsepower sizes, this motor is essentially an inductor alternator operating as a motor with the rotor torque and inertia so designed that it will start and lock in step with the alternating field in one-half cycle.

In addition to the large group of CAST and SINTERED ALNICO permanent magnets, General Electric now offers you greater flexibility of magnet design with the ductile alloys, CUNICO, CUNIFE, and SILMANAL and lightweight nonmetallic VECTOLITE. Be assured of receiving magnets of the highest uniform quality resulting from precise G-E production methods, accurate testing and rigid inspection.

Let us help you with your magnet application problems. General Electric engineers, backed by years of research and magnet design experience, are always at your service. *Metallurgy Division, Chemical Department, General Electric Company, Pittsfield, Mass.*

ANNOUNCING . . . a NEW standard line of G-E ALNICO permanent magnet HOLDING ASSEMBLIES. There are hundreds of places in the factory, store, home and workshop where these powerful magnetic devices can be used to advantage. For complete details, send for our new bulletin.



METALLURGY DIVISION, SEC. CU-2
CHEMICAL DEPARTMENT
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASS.

Please send me:

☐ *"G-E Permanent Magnet Holding Assemblies"*
☐ *"G-E Permanent Magnets"*

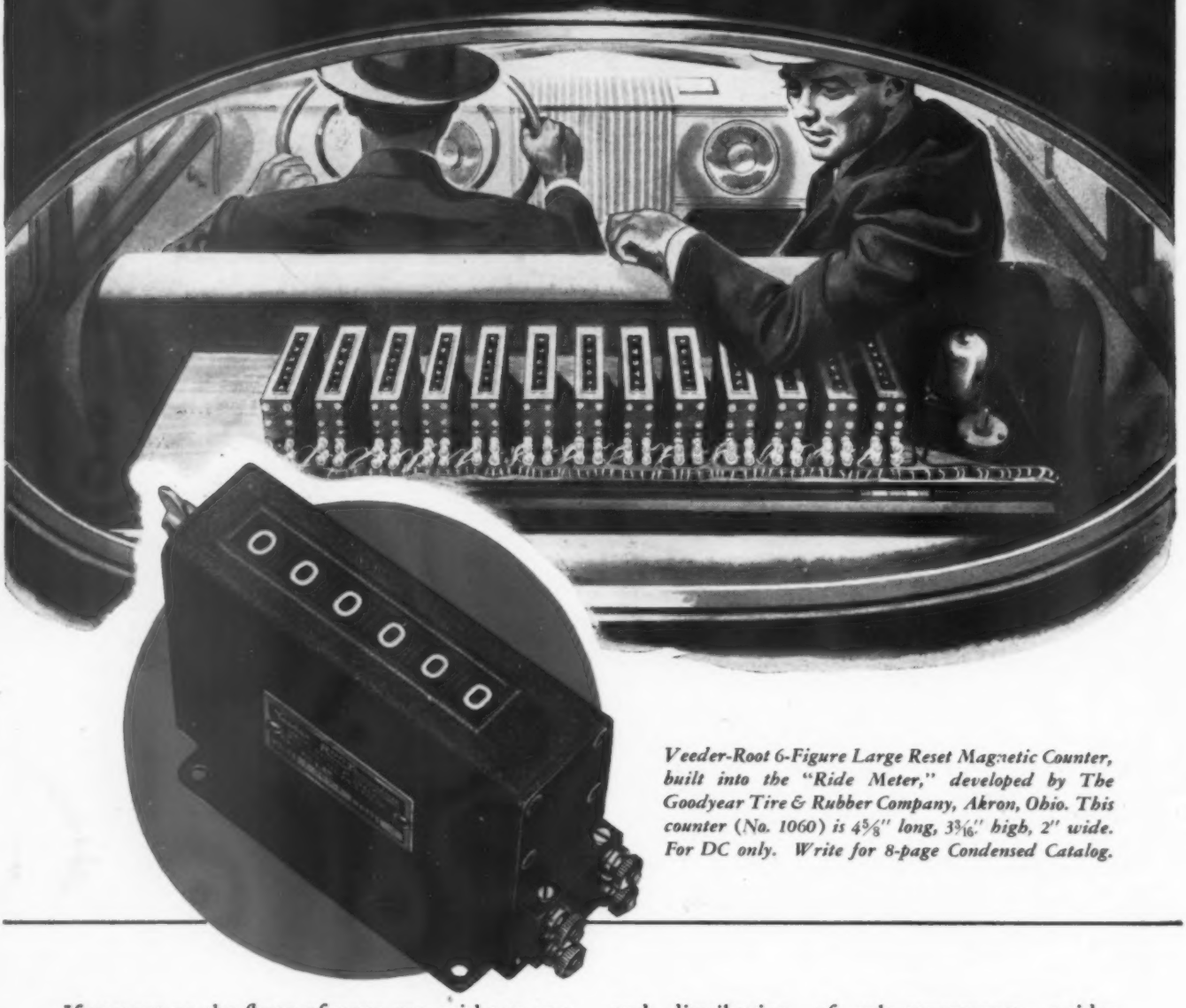
NAME..... TITLE.....
COMPANY.....
ADDRESS.....
CITY..... STATE.....

PERMANENT MAGNETS

GENERAL ELECTRIC

CD48-VI

They can SEE the Smoothness of Your Ride ...by these 13 Direct VEEDER-READINGS!



Veeder-Root 6-Figure Large Reset Magnetic Counter, built into the "Ride Meter," developed by The Goodyear Tire & Rubber Company, Akron, Ohio. This counter (No. 1060) is 4⅝" long, 3 3/16" high, 2" wide. For DC only. Write for 8-page Condensed Catalog.

If you sat on the floor of your car, without any cushions to blot up the bumps... could you count the number of road-shocks?

No one could count them! And that's exactly why Goodyear developed the ingenious "Ride Meter" which—attached to the right front axle—indicates the riding qualities of Goodyear tires.

This "Ride Meter" is a series of electrical switches, placed so that they are actuated progressively for each excursion (or movement) of the axle, either toward or away from the frame of the car. Each switch is relayed to actuate the corresponding Veeder-Root Counter in the bank of 13 counters mounted in the rear seat. This counter-record shows number and distribution of axle-movements—guides Goodyear engineers toward greater tire-resiliency and greater riding comfort.

This is one of the ways (ways too numerous to count) in which Veeder-Root Devices—by *direct* readings—give instant information on any situation that involves motion, mass or flow. Veeder-Root Counters can be built into products as original equipment, or easily attached to products in service. And you can count on "The Counting House" to show *you* how. Write.

VEEDER-ROOT INC.

HARTFORD 2, CONN.

In Canada: Veeder-Root of Canada, Ltd., 955 St. James St., Montreal 3.
In England: Veeder-Root Ltd., Dickinson Works, 20 Purley Way, Croydon, Surrey.

When travel time is vital...
"the vehicle makes the difference"

IN ALUMINUM PAINT, too...

"The VEHICLE makes the difference"

That is why Permite is the logical choice wherever utmost protection and durability are demanded in an aluminum paint.

The vehicle in PERMITE Aluminum Paint is an **exclusive,** scientifically balanced formulation of synthetic resins and specially processed oils. Skilful blending of this vehicle with 99+% pure aluminum pigment results in an aluminum paint that affords extra brilliance and light-reflectivity, extra protection, extra long life and economy.

The PERMITE exclusive vehicle promotes complete leafing action . . . cushions and floats the aluminum flakes into a many-layered, armor-like coat, firmly resistant to moisture and corrosion. PERMITE Paints save time and labor, too, because they're ready-mixed, ready to use. There is a type for every surface – interior and exterior.

For paint jobs that look good, stand up, and cut maintenance costs, you can count on Permite extra quality. "The vehicle makes the difference." See your Permite Distributor or write for descriptive booklet.

ALUMINUM INDUSTRIES, Inc.
Cincinnati 25, Ohio

The Originator of
READY-MIXED Aluminum Paints

PERMITE *READY MIXED* ALUMINUM PAINTS

Smoothness in flow control.... POWELL VALVES

Fig. 1708—200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable, wear-resisting "Powellium" nickel-bronze disc.

Like the smooth performance of a birch canoe paddled by an expert on the still waters of a lake—that's the way a Powell Valve operates. For into every valve engineered by Powell go the skills accumulated through more than a century of making valves—and valves only.

Perfection of design, scientific selection of materials, finishing to exacting specifications—all contribute to smooth, dependable performance that insures longer life and reduces maintenance to a minimum.

So when you need valves—either for new installations or for replacements—remember there's a "smooth" Powell Valve for every flow control service in modern industry.

Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", incl. Has outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Also available in All Iron.

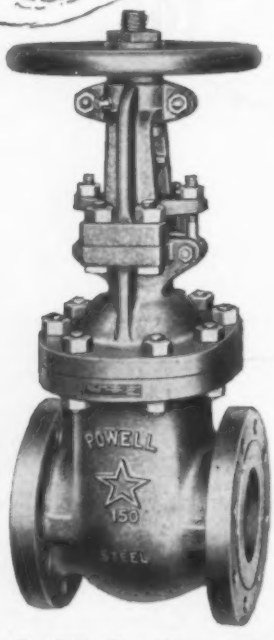


Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem and taper wedge solid disc.

Fig. 190—150-pound Iron Body Bronze Mounted "Irenew" Globe Valve. Has screwed ends, union bonnet and regrindable, renewable, wear-resisting "Powellium" nickel-bronze seat and disc.

The Wm. Powell Co.
Cincinnati 22, Ohio
DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

I got over my WOBBLE WORRIES when they gave me Corbin-Phillips Screws

"Wobble Worries" are the nagging fear that the driver will slip out of the screw slot and damage the work or cause injury. "Wobble Worries" slow down work — cut down output. Get rid of "Wobble Worries" and increase output with CORBIN-PHILLIPS *Centered* Driving. The driver is centered firmly in the Phillips recessed head — can't slip out. Screws turn up tighter — faster — and look better.

Faster Fastening with Uniform CORBIN *Screws*

Let CORBIN help you beat rising costs! First, by supplying you with Screws that your assemblers can drive hour after hour without hitting a bad one. CORBIN uniformity starts with the machines, which are kept in top condition . . . and follows through with quality checking all the way to the packing tables.

Second, by using CORBIN Screws throughout. Phillips and Slotted are available in all styles and sizes to meet your needs for wood, metal or plastic. Ask about CORBIN Sems. S-82

CORBIN SCREW DIVISION

THE AMERICAN HARDWARE CORPORATION, NEW BRITAIN, CONN. • *Warehouses: New Britain, New York, Chicago*

For Better Appearance of your product use Die Castings

Because DIE CASTINGS have sharp outlines; smallest details are exactly reproduced. Ornaments and lettering are equal to engravings.

Because DIE CASTINGS have smooth surfaces which can be attractively painted, enamelled or electroplated.

Illustration of

A toy pistol die cast

A toy pistol sand cast

Illustrations through courtesy of Kilgore Manufacturing Co.

DOEHLER-JARVIS CORPORATION

The World's Largest Producer and Finisher of Die Castings

PLANTS AT

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POTTSTOWN, PA. BATAVIA, N. Y.

Executive Office

386 FOURTH AVENUE

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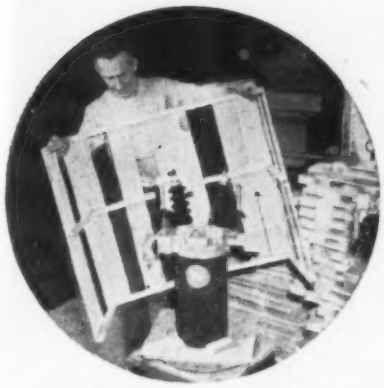


Kyle Corp. automatic oil circuit recloser is set on a specially designed Wirebound crate base. The crate holds the recloser snugly and absorbs all impacts.

In just three minutes the wrap-around sides are secured and the 65 pound recloser is ready for shipment. Sturdy Wirebounds cut shipping damage to almost nothing.

Larger, 275 pound reclosers are also crated in Wirebounds. Prefabrication of special interior packing assures a perfect fit and gives greater shipping protection.

this 3-minute

WIREBOUND

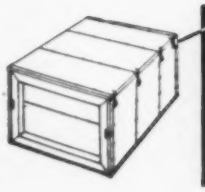
gives KYLE CORP. greater protection and lower freight costs!

Automatic oil circuit reclosers manufactured by the Kyle Corporation of South Milwaukee, Wisconsin, are built to withstand rugged use, but the company experienced shipping damage when reclosers were packed in boxes because porcelain bushings often broke under rough handling and oil leaks developed as the result of inadvertant "upside-down" loading.

Wirebound Crates have solved these shipping problems. Wirebounds are tailor-made for the Kyle reclosers in such a way that jolts and shocks are absorbed by the container itself. And when freight handlers actually see the recloser inside the crate, upright handling and loading naturally follows.

Moreover, Wirebound's time-tested combination of steel wire and thinner wood reduce shipping costs, bring important shipping room economies in low initial cost and speed of assembly. Just three minutes elapse from the time a recloser is placed on the crate base until the completed unit is ready for shipment — in safety! Shipping room space is conserved, too, because Wirebound wrap-around sides, bases and tops are stacked flat.

Today, all Kyle reclosers are shipped in Wirebounds and damage claims are negligible! To learn more about the benefits you, too, may receive by switching to Wirebounds, fill out and mail the coupon below.



Wirebound
BOXES & CRATES

MAIL THIS COUPON TODAY!

WIREBOUND BOX MFG. ASSN.
Room 1821, Borland Bldg., Chicago 3, Illinois

☐ SEND COMPLETE LITERATURE ☐ SEND A SALES ENGINEER

NAME_____ POSITION_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

PRODUCT_____

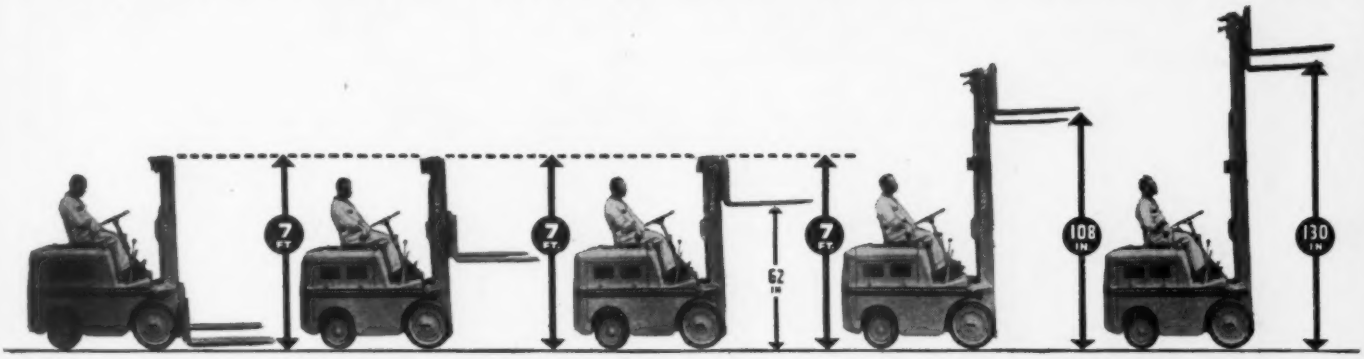
This is the **CLARK HI-LO-STACK**

A simple, effective answer to the familiar need for a machine combining *maximum lift* to make full use of storage air rights, and *minimum height* to carry a load comfortably under 7-foot overhead clearances.

MATERIAL HANDLING News

With this high-lift, low-clearance attachment, a Clark fork truck can take material through a freight car door and tier loads to the car roof, as well as tier loads rafter-high in the warehouse.

TIERING HEIGHT 130 Inches • COLLAPSED HEIGHT 83 Inches • FREE LIFT 62 Inches



83 INCHES OVERALL HEIGHT, FORKS LOWERED

NO CHANGE IN OVERALL HEIGHT WITH "FREE-LIFT" OF FORKS UP TO 62 INCHES

UP-UP-TO 130 INCHES—22 INCHES ADDITIONAL LIFT FOR EXTRA HIGH TIERING

That "free lift 62 inches" is the vital specification of HI-LO-STACK, Clark's new high-lift, low-clearance attachment. It means that the forks can be raised 62 inches from the floor before there is any increase in the overall height of the machine.

DOES DOUBLE DUTY

You recognize instantly the practical benefits of the HI-LO-STACK—it enables a fork truck to take a load through the 7-foot door of a box-car and tier loads to the roof of the car, or to tier unit loads to the rafters in the warehouse. Heretofore, with conventional lift mechanisms, the increasing height of the vehicle made it impossible for the same machine to perform all these operations; making it necessary, in many handling operations, to use two machines—one for loading and unloading cars and another for high tiering in the warehouse.

Also HI-LO-STACK is an exceedingly simple mechanism. It has only one lift cylinder, and a single set of uprights with slide members inside. Lifting is accomplished with unusually low hydraulic pressure, which minimizes possibility of leakage.

SIMPLE, STURDY, DEPENDABLE

It adds up that HI-LO-STACK is a typical Clark development—sturdily built, simple as can be, a thoroughly dependable unit; a good example of the sound engineering and incomparably rich knowledge of handling operations for which Industry looks to Clark.

Whether your business is large or small . . . if there is material being handled . . . surely there is opportunity for savings . . . consult Clark.

CLARK CREATES BIGGER VALUES—*read it in* "MATERIAL HANDLING NEWS"

Most of the major units in Clark machines are designed for maximum interchangeability and are mass-produced in Clark's own plants. Result: vital production economies and low first cost—bigger values for your investment. The new "Material Handling News" tells the story, write for it.

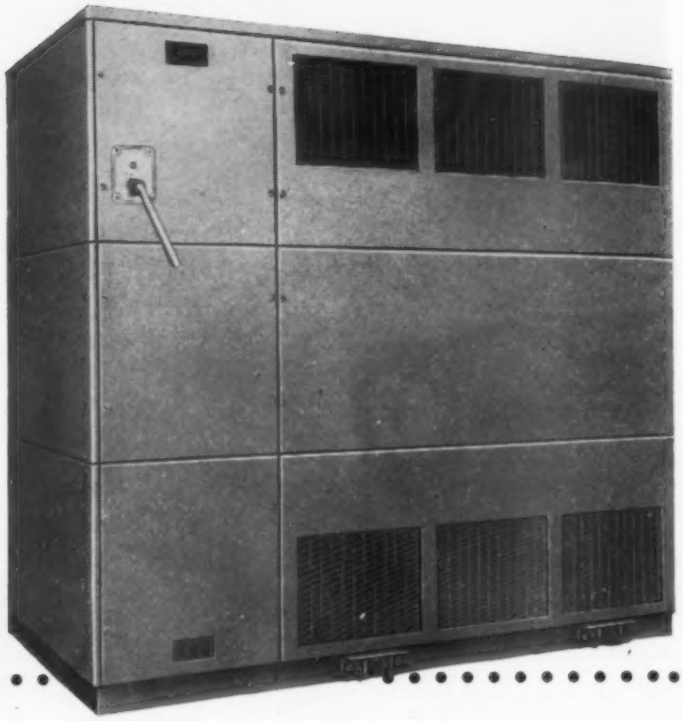
CLARK GAS AND ELECTRIC POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

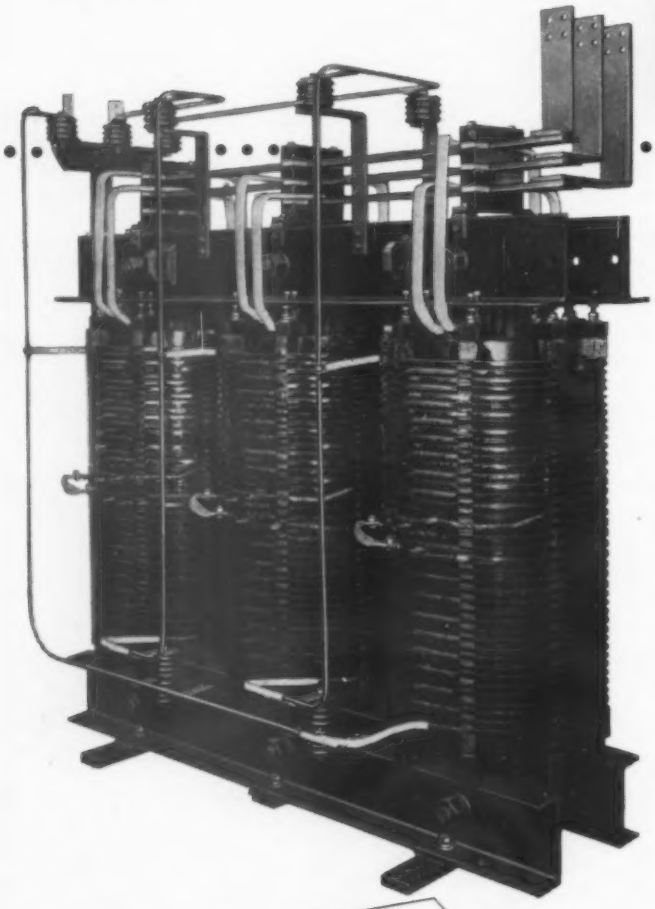
CLARK EQUIPMENT COMPANY, TRUCTRACTOR DIVISION, BATTLE CREEK 23, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Wagner Dry-Type Indoor Transformers

Now available in ratings from 100 to 2000 kva

To meet industry's growing need for larger indoor dry-type load center transformers, Wagner has broadened its line of three-phase dry-type transformers to include ratings up to 2000-kva in the 15-kv class and below. Especially developed for plant power distribution circuits, these units are compactly housed in neat, attractive enclosures, which can be arranged to include primary and secondary switchgear compartments to form readily accessible, closely-coupled unit substations. Complete enclosure of all equipment protects against accidental contact with live parts. Relatively light in weight, so that they can be used in multi-story buildings, they are readily adaptable to any installation requirement.





More than fifty years of transformer building experience has been incorporated in the design and construction of these transformers. The coil conductors are insulated with double servings of fiber glass. The windings are insulated from each other and from the core and mechanical parts using Class B and Class C materials, the latter being employed where extra strength is required. The core is sturdily constructed, and both the core and the coil stacks are provided with vertical ducts for effective cooling. The entire core and coil assembly is given successive baked coats of heat resistant synthetic varnish which produces a tough, high gloss finish. The connections between phases and to the switch gear are securely braced and well insulated from each other and from ground, and the conducting surfaces of all clamped joints are silver plated to prevent corrosion.

Transformers can be furnished with equipment for indicating winding temperature. Fans for increasing the capacity 25% may also be provided when the possibility of load growth warrants this addition.

Bulletin TU-56 describes in detail the transformers, the enclosures, the various types of incoming line sections available, and the optional equipment and accessories that can be furnished. Write for your copy today.

Wagner Electric Corporation
6360 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.

Consult Wagner Engineers on All Transformer Problems

BRIDGE BRAKES • POWER AND DISTRIBUTION TRANSFORMERS • MOTORS • UNIT SUBSTATIONS

ELECTRICAL AND AUTOMOTIVE PRODUCTS

T48-3A

men who know the ropes

take Tiger Brand every time!

● And, it's easy to see why . . . because U·S·S American TIGER BRAND Wire Rope possesses not just one or two, but *all* of the qualities needed to insure smooth performance, low-cost maintenance and long service life! Made to close tolerances and unvarying quality standards from the finest high tensile strength steel wire, you can't buy better wire rope at any price! Immediate delivery of all sizes in either Excellay Preformed or non-preformed construction. See your supplier today. *Don't get caught with your lines down!*

EXCELLAY PREFORMED

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham,
Southern Distributors
United States Steel Export Company, New York
UNITED STATES STEEL

THE BIG DEMAND IS FOR TIGER BRAND

Gage doesn't bother Lukens. Look at the extremes in the three heads pictured here! $\frac{3}{16}$ inch or 6 inches, we have the know-how and equipment needed to produce such heads.

Lukens manufactures heads in diameters ranging all the way from 4 inches to over 18 feet. And, in the near future, new spinning equipment will be ready to produce heads in even larger sizes.

In various materials, too! Lukens makes heads of carbon and alloy steels, including stainless; nonferrous metals such as nickel, Monel and Inconel, aluminum and silicon bronze; and the widest range of clad steels available anywhere.

Lukens stocks many sizes of carbon steel heads. Often, we can supply your needs from that stock. Write for Bulletin 433, which gives a complete description of stock heads and for the book "Flanging and Pressing", describing 3,868 Lukens heads. Lukens Steel Company, 415 Lukens Building, Coatesville, Pennsylvania.

LUKENS

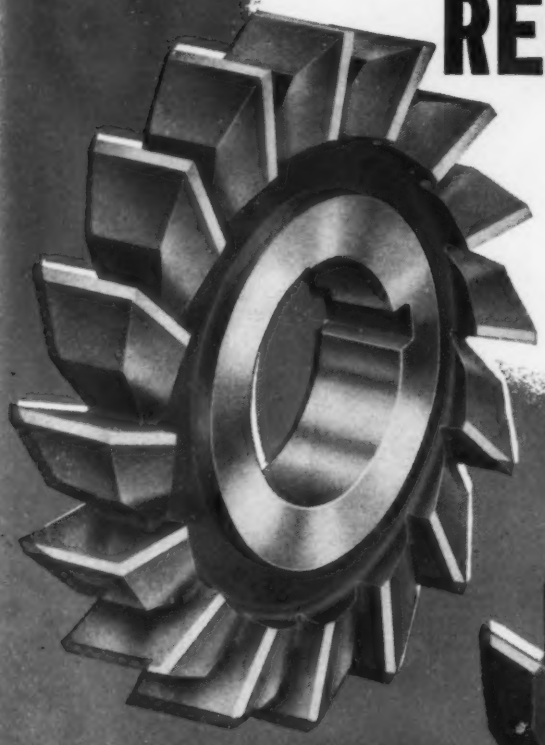
HEADS

★

FOUR INCHES TO OVER EIGHTEEN FEET IN DIAMETER

REMOVE METAL *Fast*

with these Brown & Sharpe Side Mills



SIDE MILLING CUTTERS
Frequently used in pairs for sizing nuts, bolt heads and similar work. Have cutting edges on both sides of teeth as well as periphery.

STAGGERED TOOTH SIDE MILLING CUTTE
Alternate right- and left-hand spiral angle with considerable angle of undercut permi these cutters to remove large amounts o metal without destructive vibration and cha ter. Used in pairs as interlocking cutter

HALF SIDE MILLING CUTTERS
Used for side cut as in straddle milling or in cutting slots, where complete bottom finish isn't required. Spiral on top and undercut on side give teeth improved cutting action.

PUT any one of these Brown & Sharpe Side Milling Cutters to work on a piece of metal and that metal will take shape quickly and accurately. In actual operation, you'll benefit by the inherent qualities of Brown & Sharpe design and craftsmanship that set the pace for all types of cutters.

These side mills have clean-cutting qualities . . . ample chip space, carefully calculated rake angle, selected steels, scientific heat treatment individualized for each type of cutter, and expert sharpening. These are qualities that users have learned to expect in Brown & Sharpe Cutters. They're money-savers and production boosters because they combine to give unexcelled performance in speed, accuracy and more pieces per sharpening. Specify Brown & Sharpe when ordering cutters. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

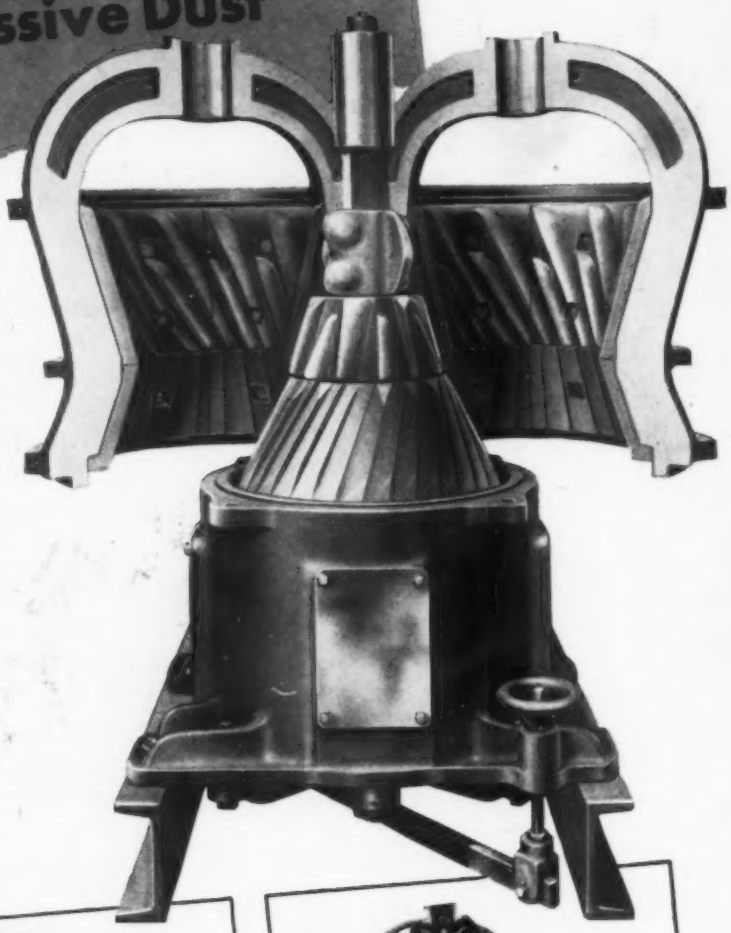
We urge buying through the Distributor

BROWN & SHARPE CUTTERS B·S

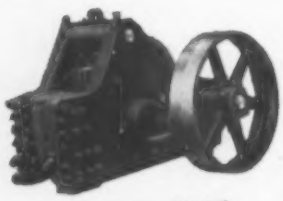
STURTEVANT

Rotary Fine Crushers

Provide Granular Products Without Excessive Dust

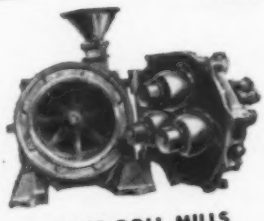


These fast, highly efficient crushers are designed to crush or granulate soft and moderately hard substances to fine even sizes without large amount of dust. They effectively handle materials up to and including the hardness of the softer limestone or cement clinker. The fineness of product is regulated by a hand-wheel. They produce a dependable quality of output from one inch to a quarter inch. Capacity ranges are available from one to 30 tons per hour depending on size of machine. Open door accessibility allows entire crushing area to be exposed for quick, easy cleaning. Write for information.



JAW CRUSHERS

for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



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for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. No scrapers, plows, pushers, or shields.

CRUSHING ROLLS

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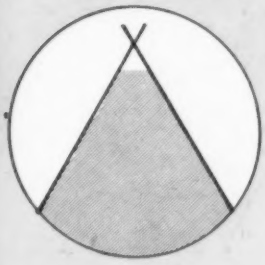
Facts about GAGES

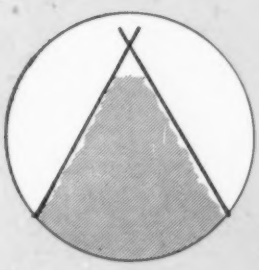
Most gages look alike, but some gages will outwear others many times. *Why is that?* The answer is something which cannot be seen by the naked eye. It is in the *finish* of the surface of the gage.

The *long-wearing* gages have surfaces that have been ground *AND LAPPED*. For example, if you magnified the profiles of the threads of gages, you could see the difference.

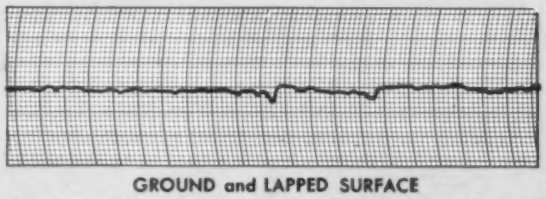


◀ This gage has been ground **AND LAPPED** to give many points of surface contact which insures longer gage life.

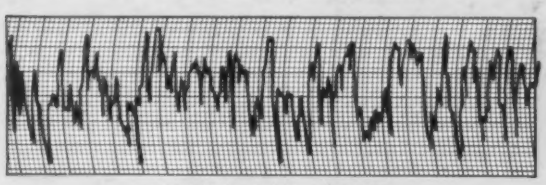
But this gage has ▶ **GROUND ONLY** finish, resulting in fewer points of surface contact and an early loss of accuracy.



This difference is even more apparent when the two finishes are compared by means of a Surface Analysis Graph.



GROUND and LAPPED SURFACE



GROUND ONLY SURFACE

This is an important fact for buyers of gages to know. GTD "Greenfield" Gages are ground AND LAPPED to an extremely high degree of finish. This "inbuilt" extra wear gives long and accurate service and better value to users—one reason for GTD "Greenfield's" reputation as a maker of fine gages.

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World's Leading

THREADING TOOLS

When you buy GTD "Greenfield", you get a quality of product that comes from the world's largest, most modern threading tool plant and its research staff of threading engineers—PLUS SERVICE from the leading distributors and GTD "Greenfield's" field men in every industrial center.

GREENFIELD TAP and DIE CORPORATION GREENFIELD MASSACHUSETTS

MAINTENANCE IS EASY when you use Kennedy Valves

Kennedy Valves are designed for easy maintenance. This Kennedy Iron-Body Wedge Gate Valve, for example, is easy to lubricate. A conveniently-located oil hole is provided in the yoke cap . . . accessible even when the valve is closed.

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All bolts on body, yoke and flanges are readily accessible, with ample room for swinging the wrench. Nuts are on top of the yoke flange—not underneath. Gland bolts have washer nuts to eliminate the nuisance of loose washers.

On screwed end valves, lugs are provided around the outside of the end connections for convenience in applying a pipe or chain wrench.

Operation of the valve, too, is easy. The large-diameter hand-wheel provides ample leverage for effortless opening and closing of the valve.

The Kennedy Iron-Body Wedge Gate Valve is only one of hundreds of Kennedy Valves, all designed for minimum maintenance, easy operation, and long service life. For details see Kennedy's 240-page Catalog.

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KENNEDY valves - pipe fittings - fire hydrants

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The Metal Men of Manitowoc have been working aluminum to precision tolerances since its pioneer days. And, after half a century of success in the industry, we are looking ahead to the next fifty rather than back at the first.

With this spirit, we are confident that, together, we shall progress still further in the years to come.

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. . . when **AMERICAN PHILLIPS SCREWS**
Fasten Better, Faster!

PRODUCTION-WISE: Output multiplies when automatically straight driving American Phillips Screws "sing a song" of *steady accelerated* production. Safe to use . . . fumble-proof, slip-proof and damage-proof, they rate high with management and workers, alike. And American Phillips Screws pay off wherever they attack inflated assembly costs, TIME SAVINGS UP TO 50% ARE COMMONPLACE!

PRODUCT-WISE: It's *definitely* the "new look" for office and home furniture, cars (motor and railroad), boats, bicycles, appliances and what not when American Phillips Screws make fastening a *feature* instead of a *function!* Discriminating buyers look for the decorative, straight set, *unburred* heads that mean high style and safety for clothes and investment. To slice *your* costs and spark *your* sales write

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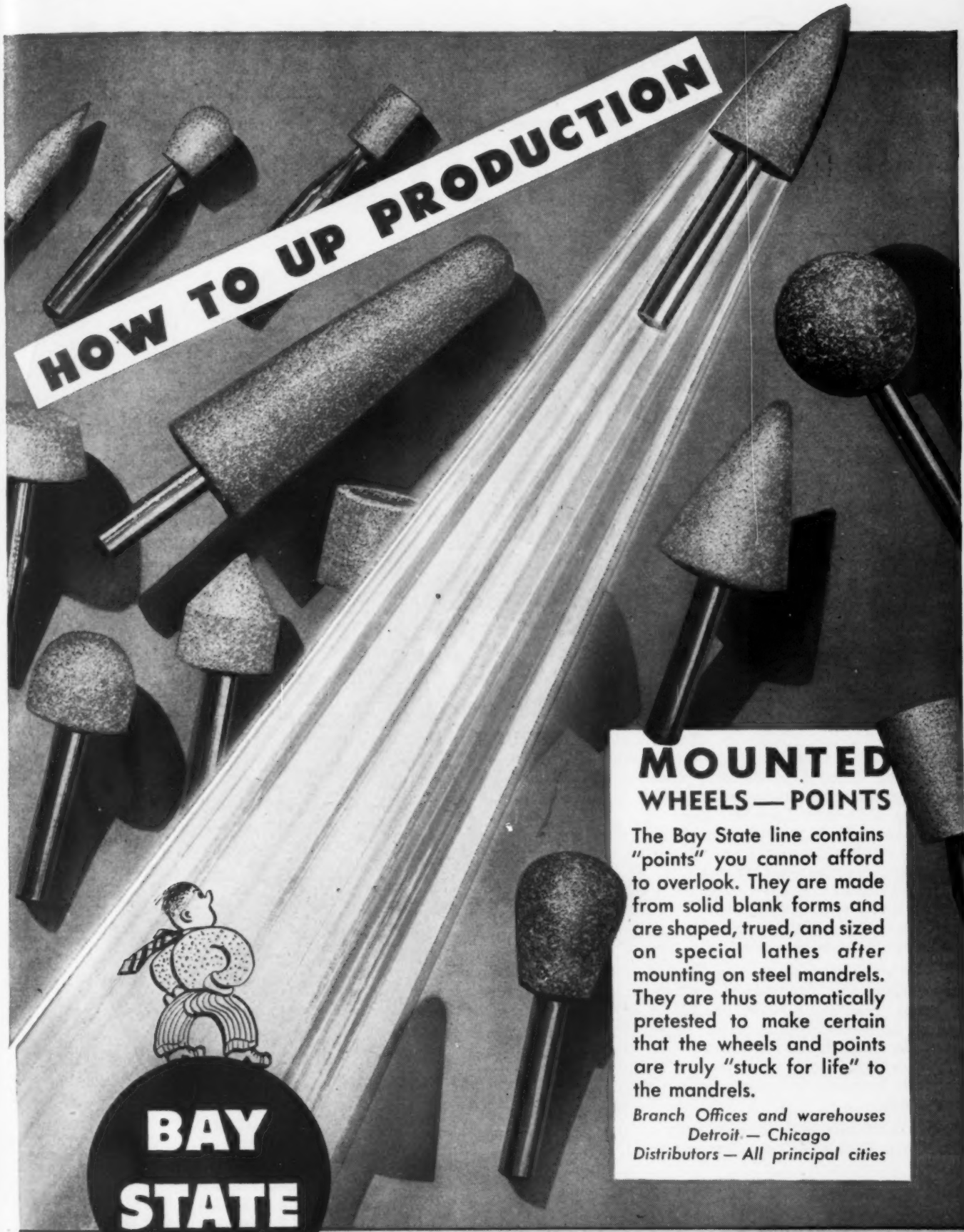
AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)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The Bay State line contains "points" you cannot afford to overlook. They are made from solid blank forms and are shaped, trued, and sized on special lathes after mounting on steel mandrels. They are thus automatically pretested to make certain that the wheels and points are truly "stuck for life" to the mandrels.
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"CARTRIDGE" BEARING

GREATER CONTACT AREA

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IF IT ISN'T WIDE ENOUGH, IT ISN'T GOOD ENOUGH to meet today's design problems. Norma-Hoffmann extra wide "Cartridge" Bearing gives you 43% to 85% greater contact area between shaft and bearing bore and between housing and bearing O. D., as compared to the conventional width bearing. This eliminates the need for locknuts and results in greater shaft strength as it is unnecessary to cut locknut threads. Slippage and peening are also prevented.

In addition, the "Cartridge" Bearing gives you (1) Longer period between re-lubrication because it holds 100% more grease—(2) Added load-carrying capacity because full sized balls are used.

Also available under license from the Marlin Rockwell Corp., Jamestown, N. Y.

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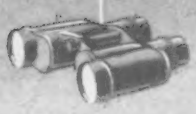

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★ **GREATER HANDLING EFFICIENCY**

Individually bench tested handle units are perfectly balanced... lightweight comfort adds skill to the hand.

★ **STRONG THIN-WALLED SOCKETS**

Unnecessary weight and clumsiness eliminated...12-point hot pierced Triple Alloy Steel, heat treated for greater strength.

★ **VERSATILE HANDLE ATTACHMENTS**

Meet all needs of most mechanics... heat treated steel for lifetime durability... lock tight to sockets... handsome finish.

SET No. SA-72½ INCLUDES:

10 sizes Hot Pierced Sockets, Reversible Ratchet, Speed Handle, Sliding T Handle, 5" Extension, 10" Extension and Universal Joint. In Metal Box with ample room for additional Sockets and Handles. For complete details on this and other Herbrand Wrench Sets, see your Jobber or write us.

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..the finest money can buy!

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THE BINGHAM-HERBRAND CORP., FREMONT, OHIO

Hamilton Movement Used in Railway Special Watches

For more than 55 years the Hamilton Watch Company has turned out railroad, navigation and personal timepieces of meticulous accuracy. And the makers of the famous "Watch of Railroad Accuracy" have long been a customer of Riverside.

Plates and bridges in the movements of Hamilton Watches are Riverside *Nickel Silver* . . . for three important reasons: 1. Riverside *Nickel Silver*, though tough, is easy to machine in any manner, providing great strength in tapped holes. It is highly resistant to wear, fatigue and corrosion. 2. It is easily worked and gives utmost satisfaction in fabrication and performance. 3. Riverside *Nickel Silver* is silvery white clear through. It takes a high polish or a fine damaskeen-type finish.

Riverside *Nickel Silver* is widely used whenever a combination of beauty, durability and economy is essential in a metal.

For more information and interesting catalogs about Riverside Nickel Silver *and Riverside's two other alloys,* Phosphor Bronze *and* Beryllium Copper, *write today.*

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RIVERSIDE

THE RIVERSIDE METAL COMPANY

NEW YORK CHICAGO RIVERSIDE • NEW JERSEY HARTFORD CLEVELAND

CESCO FOR STYLE

● Workers prefer to wear *good looking* safety equipment. Attractive styling goes into all CESCO equipment for good looks, for serviceability and comfort.

CESCO FOR COMFORT

● CESCO Safety Equipment includes *every comfort feature*—minimum weight, easy-resting contact points, ventilation, scientific forming, adjustable fit.

CESCO FOR SAVINGS

● Emphasis on *quality* makes CESCO products long-lasting and economical. Above all, CESCO *protects* workers from injury, *saves* life and precious eyesight.

CESCO FOR SERVICE

● You get *serviceable* CESCO equipment plus *service* of well qualified safety advisers. Add up style, comfort, savings, service—and your logical choice is CESCO.

CHICAGO EYE SHIELD CO.
2320 Warren Boulevard
Chicago 12, Illinois

CESCO FOR SAFETY

F.O.B. *filosofy of buying*

WE have so often had occasion to take issue with the proponents of back door selling policies, that it is a genuine pleasure to cite a sales bulletin which recognizes that the orderly, courteous, and effective way of making necessary plant contacts is through the established procedure of reception desk and front office. Lloyd Hale, president of the G. H. Tennant Company (industrial floor machines), Minneapolis, quoted in a recent issue of *Sales Management*, entitles his message, "Who Owns This Place, Anyway?", and counsels his sales staff: "To keep the back door open, don't use it."

Credit an assist to Dick Kimball, Purchasing Agent of The Foxboro Company, for bringing this to our attention. His company thought so highly of the message that it has been reproduced in their own weekly *Foxboro Recorder*. We believe that many other purchasing men will also find it of interest. Mr. Hale's advice is as follows:

"After you have spent a day or two at a customer's plant with the workmen in making an installation, you become well acquainted with the personnel and feel you know your way around the plant. You get on rather intimate terms with everyone. Then, if you call back on the customer many times, you feel you are almost one of the organization.

"This is an excellent basis to be on. However, there is something about the selling business that has a tendency to inspire men to take a little too much liberty at times. I know this from our own experience—from seeing the reaction of management toward machinery installers, sales representatives and others, who go in the back door and make themselves at home in our plant, rather than coming in through the front entrance at the reception desk.

"Many who take liberties are doing a real service in our plant. We are glad to see them; we would never scold them or tell them that they would be showing better sense if they came in at the front door. But at the same time, we do feel a slight resentment when we find them wandering around, hunting for the man they want to see.

"Even though it may slow you up slightly, it will never be to your discredit to check in through the front entrance and the reception desk, unless you are specifically told by top management not to do so. In addition, you can often make helpful extra contacts in the organization by going through the front office.

"To me, the practice of going in the back door seems a little like walking into a friend's or neighbor's house without knocking. You may be on the best of terms; still, if conditions were reversed, wouldn't you prefer that he show you the courtesy of announcing himself?

"So, for the sake of courtesy and goodwill, use the front door, even though the back door is open. Such action will add to your dignity, and the dignity of your company and your profession."

• •

PUBLIC purchasing agents are beginning to lose faith in the competitive system. Newspaper reports from all sections of the country tell of instances where requests for bids elicit no response. At Jersey City, the Hudson County Board of Freeholders has authorized Purchasing Agent McEvoy to go out into the open market and stand in line for meats, fruits, vegetables, and fuel oil like any other consumer, when it became evident that the County institutions would have neither food nor heat on a bid and award contract basis. In Detroit, the city purchasing department has been criticized for not soliciting bids more vigorously, after it became almost a daily matter of Council business to approve purchases where only one firm, out of ten or fifteen that were solicited, had submitted a bid. Purchasing Commissioner A. B. McWood, who deplores the lack of competition as much as anyone, is glad to get the needed goods on even a single bid, and figures that his

limited staff can serve the city to better advantage in chasing materials than in adding to the list of unsuccessful bidders, for the record. He has explained to the Council that under present conditions many of the suppliers have all the business they can handle, and are too busy with a backlog of unfilled orders for other customers to bid for additional city business. Even with a buying power of $20 million annually, he is handicapped by requiring adherence to complicated specifications and by the fact that the supplier has to wait at least 30 days for his money under the disbursement procedure. It all adds up to this: that the public purchasing agent is up against the same problems as every other buyer, that one rigid purchasing policy or method is not equally adapted to all market conditions, and that the purchasing officer's first responsibility is to get the goods.

• •

THIS is the time of year when the business forecasters are beginning to wonder why they were rash enough to venture a prediction of things to come. A few months hence, the customers will have forgotten the annual forecast, being immersed in the problems of the moment, and the New Year preview will be of only academic interest. But when January rolls around again they will be clamoring for another forecast and the business prophets will again oblige. It's a good old custom, part of the American Way of Life.

• •

WE quote from an address at the December meeting of the New York Chapter, National Association of Cost Accountants. Next time you want to tell a salesman, "No, it isn't worth that much to us," you might put it this way:

"Since prices and price relations are the results of objective forces operating externally in the market place, they should be regarded as the criteria of value rather than costs which vary according to volume and other circumstances peculiar to each production operation. The buyer buys for the benefit of the buyer, not for the benefit of the seller, and there is always the danger in rising prices that they will pass beyond the point where they represent value and benefit to the buyer. Beyond that point, business ceases."

TRIPLEX threaded fasteners are used the world over where the going is the hardest. They are uniform and accurate, but, above all, *they are tough*. Tough enough to stand up under the steady, everyday pounding of modern equipment. They are made to do the job that must come first with any fastener —holding things together . . . for good.

Write for our new catalog and wall chart for easier ordering.

THE TRIPLEX SCREW CO.
5331 Grant Avenue • Cleveland 5, Ohio

TRIPLEX THREADED FASTENERS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

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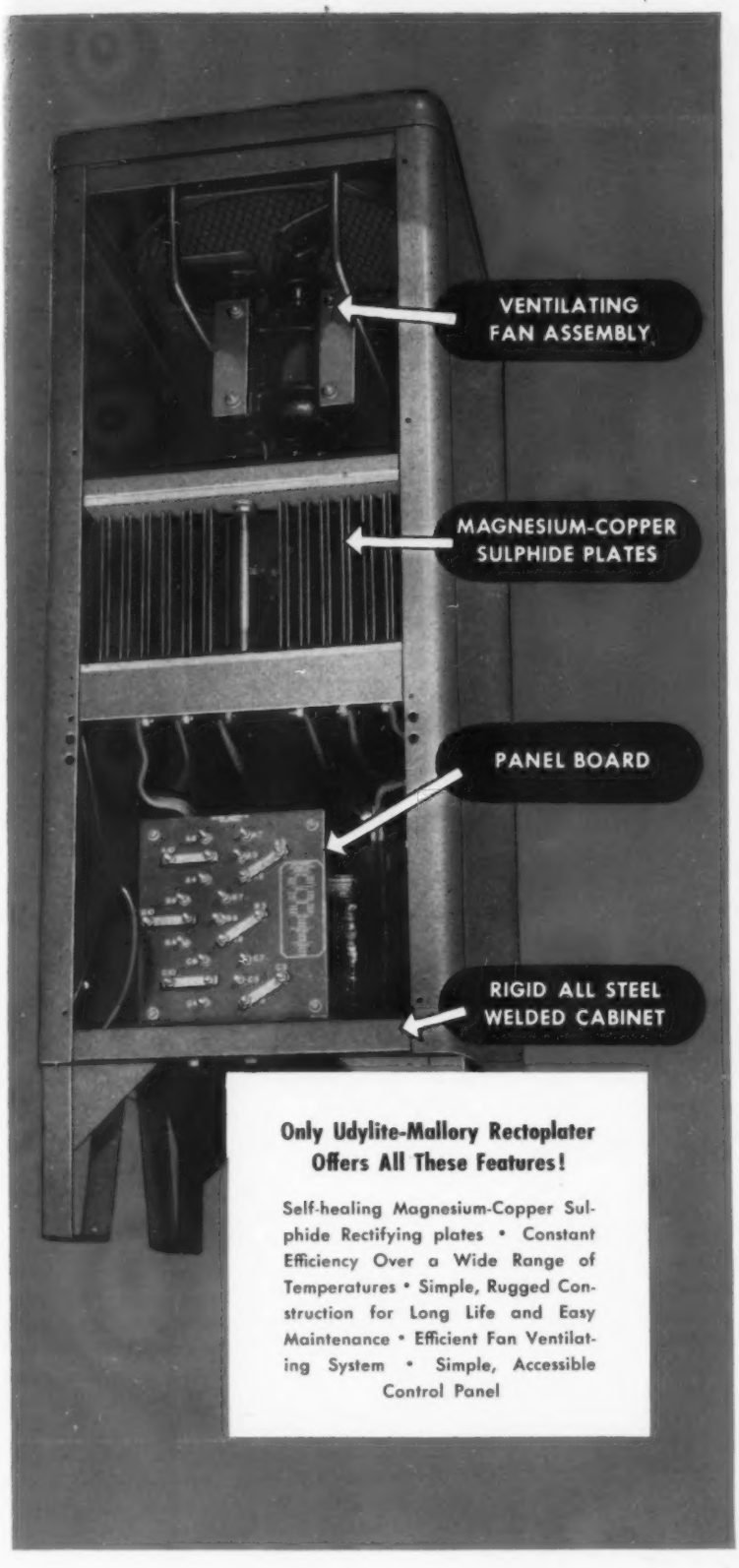
SERVICE PACKAGING OF COATED ABRASIVES

Service Packaging brings to distributors, dealers and consumers a new convenience and economy in the buying, selling, handling and use of coated abrasives.

Completed after two and one-half years of research into the packaging requirements of our customers, it provides five improvements: standard master packages—standard component resale packages — decimal counts—brand recognition by colored labels, and line identification by wrapper design.

The complete story of Service Packaging is interestingly told in our attractive 24-page book, your copy of which is available on request.

BEHR-MANNING
(DIVISION OF NORTON COMPANY)
TROY, N. Y.


VENTILATING FAN ASSEMBLY
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Only Udylite-Mallory Rectoplater Offers All These Features!
Self-healing Magnesium-Copper Sulphide Rectifying plates • Constant Efficiency Over a Wide Range of Temperatures • Simple, Rugged Construction for Long Life and Easy Maintenance • Efficient Fan Ventilating System • Simple, Accessible Control Panel

THE INSIDE STORY OF RECTOPLATER PERFORMANCE

Best gauge of rectifier performance in a plating shop is how well it operates day in and day out, on a wide variety of assignments, with a minimum of trouble, risk and attention.

This calls for a rugged, dependable unit—and that's just what Udylite-Mallory Rectoplater is. That's one reason why 8,000 of these units have been produced—more than the combined total of all competitive makes!

Heart of the Rectoplater is the self-healing Magnesium-Copper Sulphide plates. They have three characteristics of top importance:

1. Because they are self-healing they are not subject to overload damage caused by current surges.
2. They operate effectively over a wide range of temperatures.
3. Their efficiency is constant and does not diminish with use.

Add to these the rugged all-metal construction of Rectoplater – the efficient fan ventilating system—the accessible, simple panel board—it all adds up to real plating shop performance.

Here is one more place where Udylite excels—a Udylite Technical Man will gladly show you many other ways Udylite can make your business more profitable. Write Udylite Corporation, Detroit 11, Michigan. Offices in Principal Cities.

PIONEER OF A BETTER WAY IN PLATING . . .

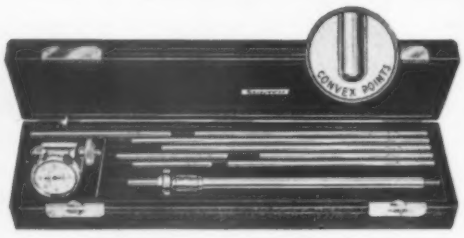
TESTED SOLUTIONS • TAILORED EQUIPMENT
AUTOMATIC CONTROL FOR METAL FINISHING

THE Udylite CORPORATION

IT'S THE Trade Mark LAST WORD Reg. U.S. Pat. Off. in UTILITY and ADAPTABILITY

The universal adaptability of Starrett LAST WORD Indicators has made them the favorite of toolmakers and mechanics the world over. No. 711-F, as shown, has reversible action, swiveling body, detachable ratchet joint contact point — graduated .001", reading 0-15-0. range .030". Can be used in tool post with universal shank or clamped to height gage. Available in other models and calibrations.

Visit the STARRETT EXHIBIT BOOTH NO. 217 Tool Engineer's Industrial Exposition Cleveland, Ohio, March 15-19



INSIDE DIAL GAGE NO. 697

An excellent gage for checking parallelism or comparing internal diameters. Zero-setting dial graduated with wide divisions by thousandths, reads 0-.020-0. Ten interchangeable rods and one 8" extension provide a range from 2¼ to 18 inches.

DIAL DEPTH GAGE NO. 640

Press the spindle button and this gage registers the depth of holes, slots, recesses, etc., by half-thousandths. A tell-tale hand and double dial count revolutions of the large hand. Normally furnished with ½" range, dial reading 0-50. Also available as direct reading, reverse movement gage with spindle normally extended (No. 640-R).

For complete information, write for new Starrett Dial Indicator Catalog "p"

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STARRETT DIAL INDICATORS

Purchasing Previews

A Washington Report..... for Purchasing Agents

February 1, 1948

GRAY MARKETS A PRIMARY TARGET . . . . .

While public attention has been largely focused on high food costs, major emphasis in the Government's initial moves on high prices will be aimed at the gray markets and speculative pricing.

As a matter of political expediency, neither political faction wishes to tumble prices during an election year, because sharp downward price adjustments are accompanied by parallel adjustments in inventories and buying, and consequently in employment.

If the gray market is eliminated, pressure on costs is eased somewhat and there is no depressing reflection on industrial activity.

Major weapon to be used against the gray market, as far as domestic purchasers are concerned, will be the industry advisory committee setup sanctioned under the controversial Republican anti-inflation bill.

The Administration has taken a skeptical view of the effectiveness of voluntary industry committees in stabilizing distribution of scarce materials and in normalizing inventories. The idea was developed in the Department of Commerce, with the support of Secretary Harriman.

EFFECTIVENESS OF VOLUNTARY ACTION . . . .

The present experiment in industry collaboration with Government through representative advisory committees is a limited excursion into voluntary controls. Decisions made by industry committee members are purely advisory, and the Government has no power to make these decisions mandatory, whether or not the Government policy favors the decisions so made.

Obviously, under these conditions, the industry committee actions will be effective only where the number of major producers in an industry is small, and these can fairly well speak for their industry.

An agreement reached among a group of representative steel producers can effectively establish policies that will guide the steel industry. When it is a question of establishing similar procedures in an industry such as lumber, the difficulties become apparent.

Industry groups can be fairly successful in drying up gray markets in nails, or cast iron soil pipe, or certain types of woods temporarily in short supply---merely by persuading some offending members within the industry that the practice is unhealthy. There are a number of superficial industrial practices which can be talked out. But deep-rooted practices that stem from the economic interest of one or a number of members of an industry will not yield to committee decisions taken under a twilight sanction by the Government, which in effect merely relieves the industry groups from anti-trust action.

If the material supply outlook improves and the pressure on prices moderates, the industry committees will not become important factors.

If, on the other hand, the inflationary force gets out of hand, or if a sharp trend develops, a greater force of law may be sanctioned, with the industry committees assigned a more important function.

EXPORT CONTROLS REVISED . . . .

Other tactics will be used to moderate export prices. After the war's end, when the export function was passed back to private traders, the Government established the historical position of exporters as the basis for assigning export quotas.

This led to some abuse, in that mere possession of a quota was used in some instances as a franchise to sell for foreign consumption, with little restraint on price. Such looseness in pricing for export gave rise to a significant amount of gray market transactions.

To introduce greater competition among exporters, the Office of International Trade of the Department of Commerce has issued regulations which dilute the export franchise granted under the historical method of selecting exporters.

Under the new policy, the Government will establish quotas on the overall tonnages of materials to be exported. These tonnages will be allocated among the various countries wishing to purchase the commodities. Exporters will be assigned their quotas, with their price used as one of the determining factors.

The new policy now is aimed at cutting down the speculative pricing considerations in export goods. Upon adoption of the Marshall Plan, the new policy will dovetail closely with the long-term European reconstruction program.

PRICE ADJUSTMENTS HELD KEY TO STABLE ECONOMY . . . .

Since end of the war, increased supply of materials and greater production have been advanced as the cure for the nation's economic problems. Now, production is at a near-maximum, and the major problem is to sustain this level, and to introduce a greater element of equilibrium into the economy.

A number of factors are propping up the current high level of production---the export demand, world food shortages, replacement demand for durable goods interrupted during the war, and the large military program.

These factors will exert pressure on prices, and as they are in some measure artificial and temporary, adjustments in prices are considered inevitable.

The big question is whether these adjustments will be made on a rational, and therefore gradual basis; or whether there will be a sudden changeover from aggressive buying to a widespread abstention from procurements in anticipation, or as a result of a price break.

The outlook is good for the moderate approach.

SPRING GAP IN BUYING UNLIKELY . . . .

In the late winter and early spring of last year, buyers were clearly hesitant to buy, and this hesitation led to a temporary drop in some prices. When buyers realized by early summer that the trend in prices would be up instead of down, they rushed into the market, and by this action accelerated the upward trend.

Buyers currently are less inclined to gamble that prices will go down. Any major change in outlook is not expected until the third quarter of this year, and in an election year, efforts of both parties will be toward buoying up the economy, rather than deflating it.

Acme Silverstitcher Reduces Carton Costs

Read how eastern packer of choice tomatoes cuts carton costs by $10 per 1000 with Acme Silverstitcher

Due to limited space, this packer used to buy preformed telescope cartons in comparatively small quantities. Then he told his problem to an Acme Shipping Specialist.

Now, he buys scored blanks, does his own stitching, and speedily turns out cartons according to his daily needs. A large number of blanks can be stored in a small space and used as required.

Double Savings—Space and Money!

With an Acme Silverstitcher, this packer saves one cent on each of thousands of cartons. Even with limited storage space, he now can make good "buys" on carton blanks and be certain of always having cartons when he needs them.

Your shipping room may be a good place to start saving money . . . you may be able to get better shipping at lower cost. Why not call in an Acme Shipping Specialist for suggestions? There's no obligation.

Send the coupon for further information or write direct for help on your specific problem.

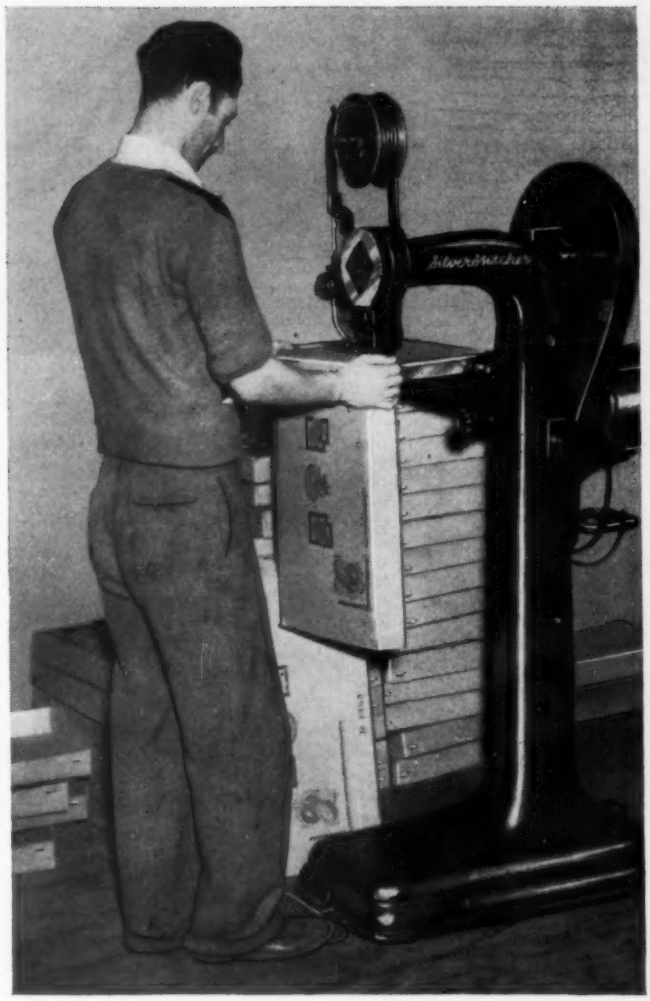
ACME STEEL COMPANY

NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11

ACME & MORRISON Silver Stitchers

REG. U. S. PAT. OFF.

AND SILVERSTITCH BOX-STITCHING WIRE



GRADE "A" SHIPPING FOR CHOICE TOMATOES with an Acme Silverstitcher. They're packed in cartons on which the shipper now saves $10 per thousand. Easily spoiled and very vulnerable to bruises, these choice tomatoes reach stores and customers in perfect condition.

Acme Steel Company, Dept. P-28
2838 Archer Avenue
Chicago 8, Illinois

Please send me your free booklet describing Acme Silverstitchers and their applications.

Name.....

Company.....

Address.....

City..... Zone..... State.....

You'll be amazed at what can be made with Bundy Tubing!

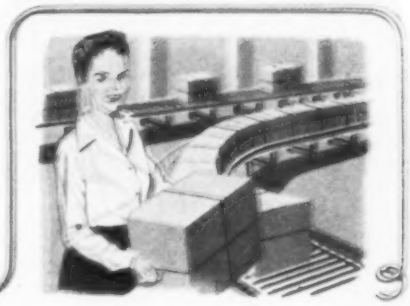
Whether you make toys for tots, aerials for cars or garden tools for backyard putterers . . .

Chances are, Bundy Tubing can help you do it faster, easier, cheaper and with a better, stronger product to boot.

PROOF . . . ? Right here, together with a hint of brand-new applications alert manufacturers will snap up *quickly!*

1 Up pops a youngster—brakes must work, though miles of shimmy and shake have tortured hydraulic lines. *That's why brake systems in 95% of today's cars use* strong, vibration-proof Bundyweld*—it's *double-walled* from a *single* strip.

2 Mmmm . . . good! Cooling devices in soda fountains (restaurants, bars, too) use Bundy Tubing for purity. Makers of beverage cooling coils are shifting to Bundyweld *nickel* because it's also fast cooling and easily fabricated.



3 Bundyweld Tubing shows up in most surprising places. Spacers between wheels in roller conveyors, for instance. Here, the close tolerance, uniform wall thickness and unusual strength of Bundyweld deliver the goods.

4 Or how about this? Television antennas of light, strong Bundy Tubing now pluck news and entertainment from the air. Weather-resistant Bundyweld is sag-proof, easily worked, ideal for rugged new uses with this great new industry.

5 And there are untapped possibilities. Sled runners, maybe. Strong permanently-round Bundy Tubing might be just the thing to give a kid the fastest sled on the hill . . . and to open up a gold mine for some foresighted manufacturer.

6 Rake handles, too. Or, what-have-you? There are probably hundreds, even thousands, of places where Bundyweld steel, Monel or nickel can go to work on a brand-new idea. Will *your* idea be one of these profitable possibilities?

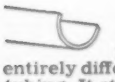
7 Many of today's most successful Bundy Tubing uses were once nothing more than undeveloped ideas. Often Bundy engineers have helped to develop these ideas, through expert knowledge of the uses, structural and functional, which tubing can serve. Perhaps a Bundy engineer can help you with your idea. Call or write *Bundy Tubing Company, Detroit 14, Michigan.*

BUNDY TUBING

*REG. U.S. PAT. OFF.

ENGINEERED TO YOUR EXPECTATIONS

WHY BUNDYWELD IS BETTER TUBING



1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong, ductile tube, free from scale, held to close dimensions.

4 Bundyweld comes in standard sizes, up to 5/8" O.D., in steel, Monel or nickel. For special sizes or tubing of other metals, call or write Bundy Tubing.

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES:

Standard Tube Sales Corp. 76-01 Woodhaven Blvd. Brooklyn 27, N.Y.	Peirson-Deakins Co. 823-824 Chattanooga Bank Bldg. Chattanooga 2, Tenn.	Lapham-Hickey Co. 3333 W. 47th Place Chicago 32, Ill.	Rutan & Co. 404 Architects Bldg. Philadelphia 3, Pa.	Pacific Metals Co., Ltd. 3100 19th St. San Francisco 10, Calif.	Eagle Metals Co. 3628 E. Marginal Way Seattle 4, Wash.	Alloy Metal Sales, Ltd. 861 Bay St. Toronto 5, Canada

Bundyweld nickel and Monel tubing is sold by International Nickel Company distributors in all principal cities.

IF YOU WANT to test the public's knowledge of automotive combustion try saying to a friend, "There's a fire in your car." He'll jump and run for a fire extinguisher. Like most people, he doesn't realize that it takes about 12 to 16 explosive fires to get the wheels to turn once, or about 8000 explosions per mile traveled. That's combustion—the fire in your car.

To the all-important problem of increasing the efficiency of combustion in all types of internal combustion engines, Cities Service has devoted more than 15 years of research. Today the result of this research is reflected in a whole range of new or better products. Faster-acting, more efficient engine cleansing solvents; motor oils to keep engines cooler and cleaner; improved, better balanced gasolenes; plus the remarkable Power Prover service to tune-up engines scientifically in a matter of minutes.

This same extensive research in combustion is currently solving production problems for industry by cutting costs, saving fuel and improving efficiency in all kinds of industrial applications.

If you have a combustion problem in your plant or transportation equipment why not call upon a Cities Service combustion expert to take over your worries. For further information write: Cities Service Company, Sixty Wall Tower, New York 5, N. Y. Room 46.

CITIES SERVICE

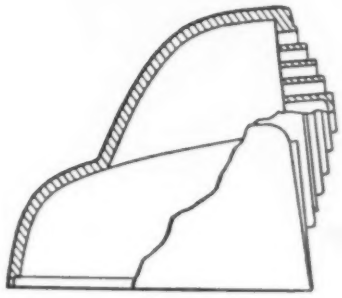
Cities Service means Great Service

ALL THE WAY FROM THE REFINERY TO YOUR PLANT

Problems solved by Richardson...in Plastics

#5 Reduction of Costs in Manufacture of Plastic Cabinet

PROBLEM: To effect the most economical method of making a plastic housing for an intercommunication system remote station.



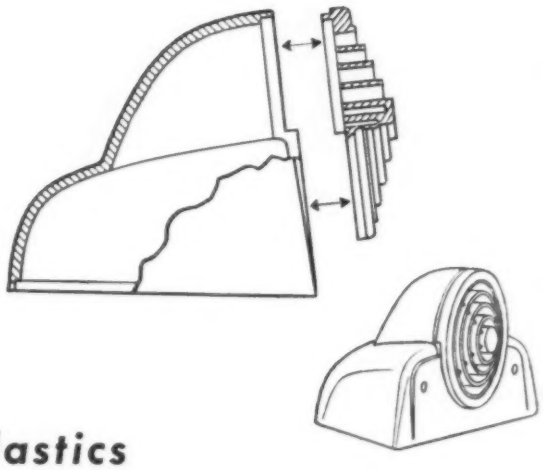
SOLUTION: Richardson Plasticians redesigned the unit, making it in two pieces--a housing and a grille. A small opening was left where the mating surfaces of the grille and cabinet come together. These changes resulted in the following:

(1) Elimination of a costly undercut in the mold.

(2) Easy assembly.

(3) Steady flow of products through practical manufacturing facilities.

(4) No detraction from eye appeal of cabinet design.



INSUROK *Precision Plastics*

INSUROK is the name of industrial laminated and molded synthetic plastic products produced by Richardson. Laminated INSUROK is available in sheets, rods, tubes, punched and machined parts, made with paper, fabric, glass, etc. Molded INSUROK products are made from Beetle, Bakelite, Plaskon, Tenite, Styron, Durez, Lucite, etc., by compression, injection and transfer molding.

The RICHARDSON COMPANY

Sales Headquarters: MELROSE PARK, ILL. FOUNDED 1858 LOCKLAND, CINCINNATI 15, OHIO

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RICHARDSON MEANS *Versatility* IN PLASTICS

For a **COMPLETE LINE OF BABBITTS** to use at any load or any speed . . . for the answers to all bearing metal problems . . . for fast deliveries and friendly service . . . call the nearest Federated office.

All of Federated's 25 sales offices and 11 plants are linked . . . joined . . . in a common purpose—to bring you the advantages of the uniformly good facilities which this huge organization maintains.

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Federated
METALS DIVISION
AMERICAN SMELTING AND REFINING COMPANY
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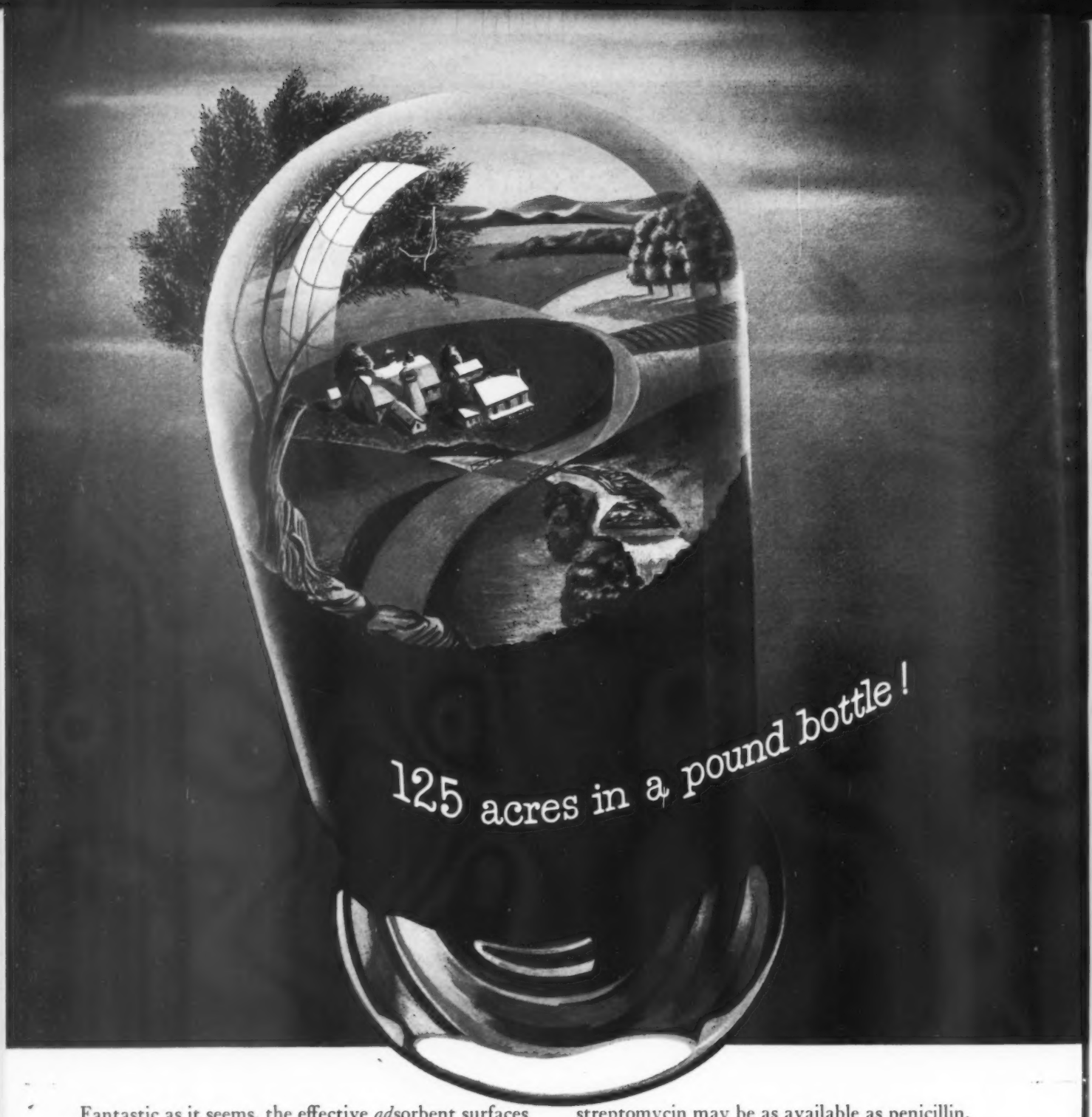

Fantastic as it seems, the effective *ad*sorbent surfaces of a pound of activated carbon are actually equal in area to about 125 acres.

We don't pretend to know how this can be possible, but our research men, who understand such things, have figured it out scientifically. We like to think of *what* it does rather than *how* it does it.

For example, when used to isolate streptomycin from the mold liquor in which it is produced, a *Pittsburgh* activated carbon, tailor-made for this purpose and with greater adsorptive capacity, assisted materially in the rapid development of a process with a capacity sufficient to permit removal of the "wonder drug" from the government's critical list. Soon streptomycin may be as available as penicillin.

Less dramatically, but like the producer of streptomycin, a manufacturer of water purification systems for homes, institutions, and industries tested every available adsorbent and then selected a *Pittsburgh* activated carbon which was specifically designed to meet the exacting requirements of his purification systems.

If your "problem" involves the use of an adsorbent, in gas or liquid phase, for purification, solvent recovery, decolorization, deodorization, fractionation, isolation, catalysis or air conditioning, you should investigate the adaptability of activated carbon to your processes. *Pittsburgh* activated carbon is produced in the types and grades usually required, or a special type can be developed for your specific need. Your inquiries are invited. Write for latest price list.

P
C & C

PITTSBURGH COKE & CHEMICAL COMPANY

Grant Building · Pittsburgh 30, Pa.

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How a NI-ROD build-up saved a 3-month lay-up

From Canada comes the story of how the cast iron main gear of a big power shovel, made in England, had stripped 74 of its 76 teeth.

Getting a new gear meant a delay of 3 to 4 months... and the shovel was urgently needed. So, the owners called the Bowers Machine Company of Canada to repair the present gear.

Welding seemed the only solution. But, cast iron welds were generally considered risky propositions. So, Bowers turned to G. D. Peters and Company, Ltd. for their opinion.

Yes, indeed, Peters' men reported, it was possible to build up this gear. But, it called for careful control... and a high quality Nickel-cored electrode called Ni-Rod.

See below the step-by-step picture story of how this unusual job was done.

1 After degreasing in carbon-tetrachloride, and a thorough cleaning, the damaged teeth were ground down to offer a smooth surface for welding. Where teeth were broken off flush, holes were drilled in the rim and tapped. Studs were then inserted to lend extra support to the new teeth.

2 Before welding, the heavy cast gear was suspended over a temporary oven and heated with an oil torch to 600° F. This eliminated stresses and the possibility of cracking. The welding electrode used was ⅛" Ni-Rod at 95 amperes. After making one pass on one tooth, the gear would be given a quarter turn to assure even distribution of the welding heat.

3 This photo shows finished Ni-Rod "build-ups" on 6 of the teeth. To cut down machining time, tooth-size formers were used to enable the welder to gauge the depth of his deposit. These formers were of brass because Ni-Rod does not fuse with that metal.

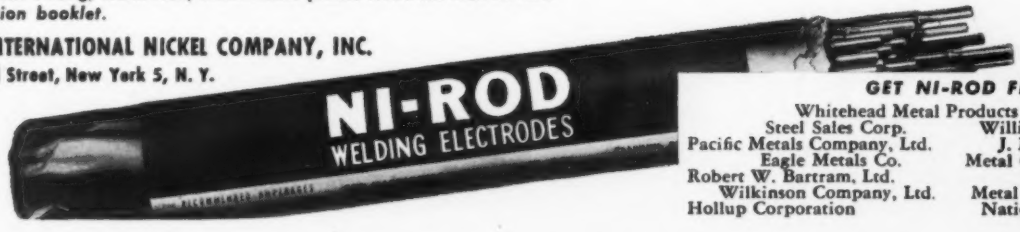
4 After the gear had gradually cooled overnight in a low coke fire, the work of milling and machining began. Above illustration shows teeth being milled into Ni-Rod deposits. This work, says Bowers, proved to be easier than expected because the Ni-Rod deposits machined perfectly. Thus, instead of a 3 or 4 month lay-up, the excavator was back on the job in less than 2 weeks.

*Reg. U. S. Pat. Off.

Ni-Rod comes in 3/32" to 3/16" diameters. Order a 5-lb. package and you'll agree it's the solution to any cast iron welding problem calling for strong, crack-free, machinable joints. *Write for free Ni-Rod instruction booklet.*

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

EMBLEM OF SERVICE
INCO NI-ROD
TRADE MARK



GET NI-ROD FROM:

Whitehead Metal Products Company, Inc.
Steel Sales Corp.
Williams and Company
Pacific Metals Company, Ltd.
J. M. Tull Metal & Supply Co.
Eagle Metals Co.
Metal Goods Corporation
Robert W. Bartram, Ltd.
Alloy Metal Sales, Ltd.
Wilkinson Company, Ltd.
Metal & Thermit Corporation
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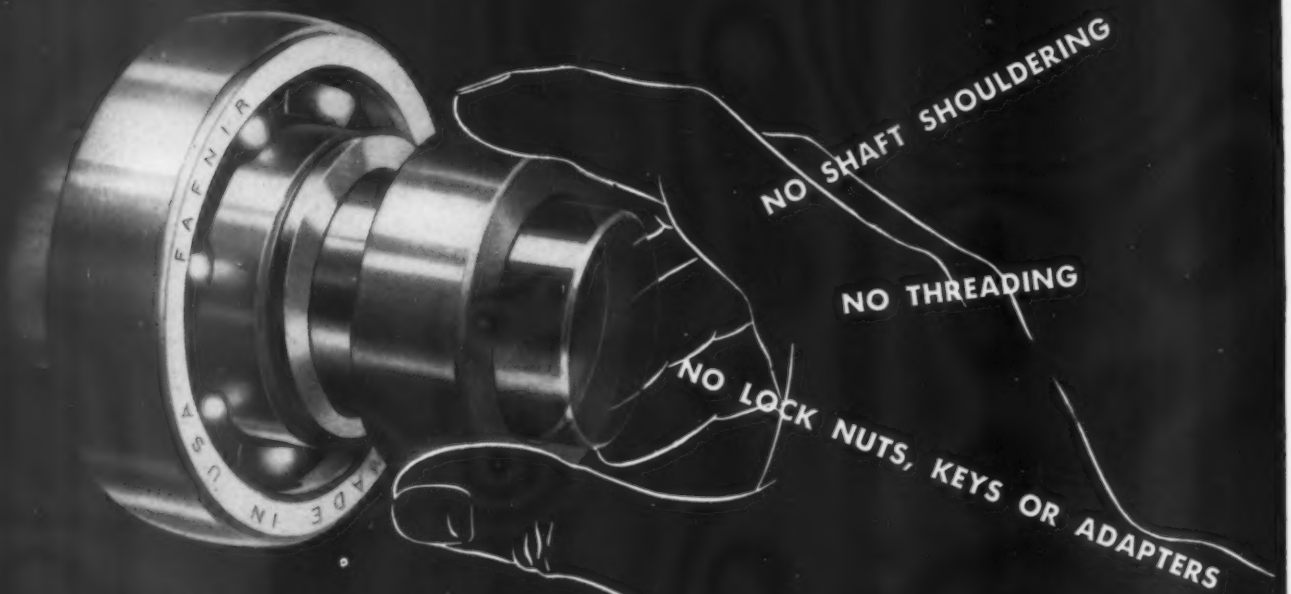
EASIEST TO INSTALL . . . and remove



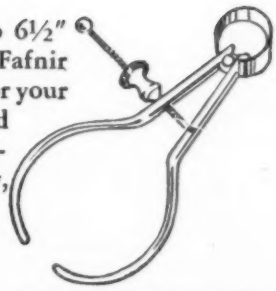
FAFNIR Wide Inner Ring Ball Bearing with the self-locking collar

SLIP IT OVER THE SHAFT

ENGAGE AND TURN THE COLLAR

SET THE SCREW — BEARING IS SECURED TO THE SHAFT

For standard shafts . . . from ½" to 6½" . . . built into a complete line of Fafnir Power Transmission Units or adaptable for your own housing. Available from authorized Fafnir Distributors located in all principal cities. The Fafnir Bearing Company, New Britain, Conn.



MOST COMPLETE LINE IN AMERICA

FAFNIR
BALL BEARINGS

SMOOTHER HANDLING . . . BY A DAM SITE!

Another Top Performance by a BWH Product

In refacing a big Western dam to a thickness of eight feet, grout had to be forced through slotted pipes to a depth of 170 feet . . . and smooth, uniform distribution was absolutely essential.

BWH engineers unhesitatingly recommended a flexible joint of rugged BWH Grout Hose that would permit an even flow of grout from the master mixer into redistribution hoppers — even under pressure up to 500 pounds!

In addition, when redistribution hoppers that kept the lines and slotted pipes supplied with grout were full, the BWH Hose not only had to withstand the surge of pressure caused by abrupt shut-offs, but also had to route excess grout back to the master mixer.

24 hours a day, this "shaker" kept lines full, and only occasional turns of the hose were required to prevent settling of the grout.

When the job was successfully completed, this tough hose showed almost no sign of wear. The secret of its durability is an abrasive-resistant rubber inner tube and a carcass of specially woven extra-strong duck. For additional stamina, a spirally-wound band of braided, high-tensile wire is imbedded in the rubber. Tube and carcass are then encased in a strong rubber cover, able to withstand hard knocks and operating hazards.

Grout Hose is just one of the many high-quality products manufactured by BWH. Whatever your needs for industrial rubber goods, look to BWH products for dependable ruggedness—BWH distributors for dependable service!

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearby BWH distributor, or write us direct.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

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THE LOW COST PACKAGE with the *Luxury Look*

Food in Deltaseal Bags stays pure. For this rich-looking, modern package protects against sifting and contamination... guards the quality of your foods right into the home. Because all of the sides are flat, Deltaseal Bags stack compactly... no wasted space in storage or transit. Furthermore, with your brand printed in a colorful, eye-catching design, Deltaseal Bags make attractive, sales-building displays.

Ask your Bemis representative about the economy of Deltaseal Bags and the Deltaseal Packaging System.

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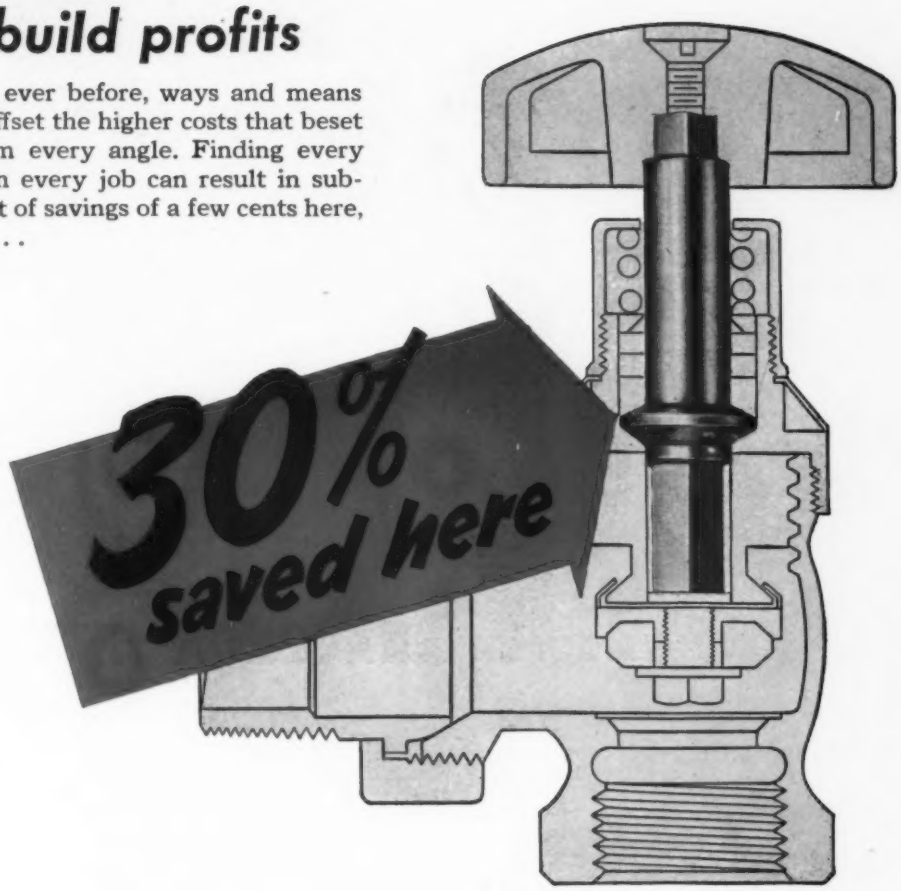
BEMIS *Deltaseal* BAGS

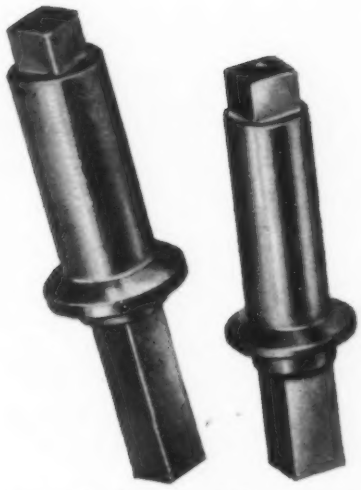
Available in 5-lb., 10-lb. and 25-lb. sizes. Also in smaller sizes down to 2 lbs.

Pennies build profits

Today, more than ever before, ways and means must be found to offset the higher costs that beset manufacturers from every angle. Finding every possible shortcut in every job can result in substantial profits built of savings of a few cents here, half-a-cent there . . .



by using an ANACONDA DIE PRESSED FORGING



Anaconda Die Pressed Forging and machined counterpart—a valve stem used in radiator valves manufactured by W. D. Cashin Company, South Boston, Mass.

The radiator valve stem illustrated is an example. Formerly, these were turned from rod stock with the squares milled on both ends. Now, an Anaconda Die Pressed Forging eliminates 90% of this machining. The difference is a 30% saving in the cost of producing this one part. In addition, there's the advantage of making several different sizes of valve stems by simply cutting the forging to length.

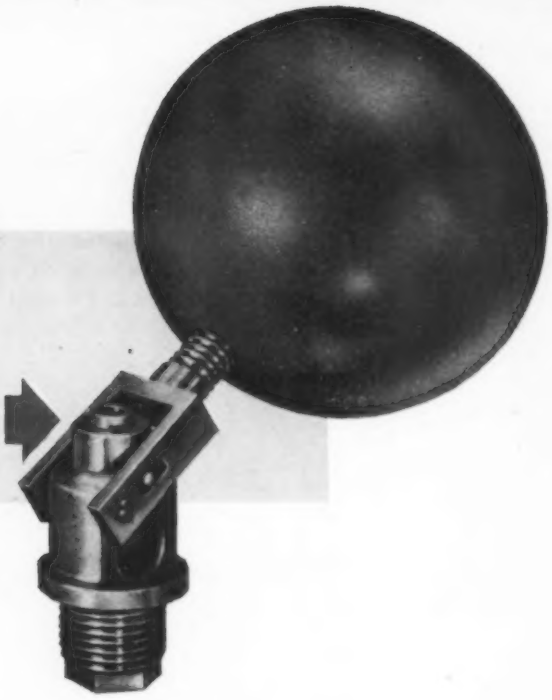
There's a brand new booklet now available on Anaconda Die Pressed Forgings. Its many comparative illustrations may indicate cost-saving methods of producing complicated parts of unusual design. Write for Anaconda Publication B-9.

THE AMERICAN BRASS COMPANY

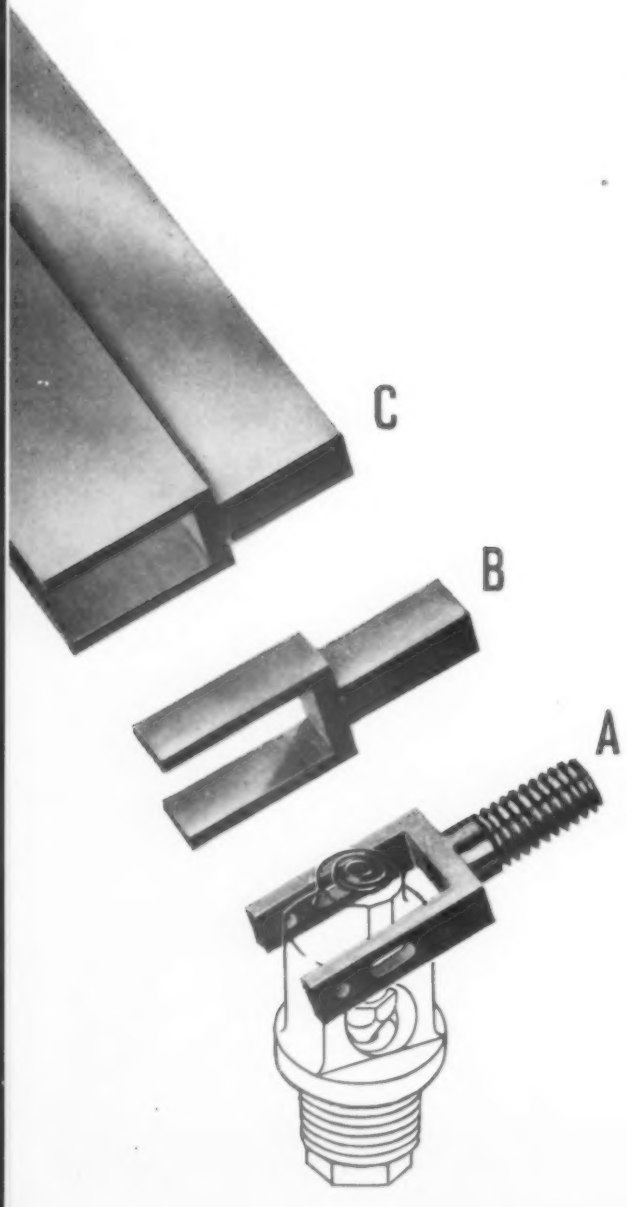
ANACONDA
from mine to consumer

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada:
ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

40% saved here



by using an ANACONDA EXTRUDED SHAPE



It's really as simple as A-B-C. The brass yoke "A" is part of a ball-float valve in a "Thermoflex" Trap, manufactured by W. D. Cashin Company, South Boston, Mass. It was machined from the blank "B", sawed off the Anaconda Extruded Shape "C". Castings, previously used, proved costly and unsatisfactory. Now, because the extruded brass shape is wrought metal, yet weighs less than half that of solid bar stock, there's a combined saving of 40% in milling, metal and money.

Anaconda Extruded and Drawn Shapes are made as close as possible to the size and shape of the finished product. They machine readily, are consistently accurate in dimensions, and are available in long mill lengths in copper, brass, bronze and a wide range of special copper alloys.

Publication B-28 gives basic information on Anaconda Extruded and Drawn Shapes . . . also on other forms of Anaconda Metals. Write for a copy. 47120

ANACONDA
from mine to consumer

Anaconda
EXTRUDED SHAPES

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

Osborn brushes scrub steel strip to produce top quality tinplate faster

BRUSHING PERFORMS IMPORTANT SERVICE IN CARNEGIE-ILLINOIS ELECTROLYTIC TINNING PROCESS

PICTURED above is one of three electrolytic tin mills operating around the clock at the Irvin Works of the Carnegie-Illinois Steel Corporation. And, from the inception of this process Osborn Brushes have performed a vital function in the continuous production of quality tinplate.

Located at the point in the line indicated by the arrows are two Osborn Master Tampico Spiral Brushes between which the strip passes after emerging from a sulphuric acid bath. Purpose of bath is to remove annealing scale and soften any grease or dirt adhering to the surface. The brushes' task, with the aid of a 180° hot water spray, is the final removal of the grease and dirt particles.

It's an all-important brushing job because failure to remove particles results in a porous coating. And comprehensive tests have shown that Osborn Brushes not only perform this work more effectively but reduce down time because of their one-third longer service life.

Have you a cleaning, polishing, roughing, finishing or deburring job that poses a production problem? The right brush, properly applied may be the answer. And you can find out quickly. Just ask for the services of an Osborn sales engineer. His business is to find where brushes can fit into your business profitably.

Osborn Brushes

THE OSBORN MANUFACTURING COMPANY

5401 Hamilton Avenue *Cleveland, Ohio*

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

wiring jobs go smoothly when you plan ahead with GraybaR

Graybar distributes *everything* for plant or product wiring. Wire, cable . . . busduct, conduit, fittings, raceways . . . connectors, wiring devices, panels, fuses . . . safety switches . . . switchboards — they're all products of leading manufacturers — all made conveniently available to you or your electrical contractor through a single contact, your local Graybar Representative.

Many wiring items are stocked at the Graybar warehouse near you. Thus Graybar not only can simplify your ordering but often can shorten delivery time.

As for items that are still on the "tight" list, the best thing to do is plan ahead with us now. We'll schedule deliveries to fit in with the progress of your projects, avoiding supply-shortage delays for you entirely — or, at least, as far as ingenuity makes possible.

The near-by Graybar Inside Construction Specialist will gladly help you plan any wiring project. Our other Specialists can help solve any electrical problem you may have. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N. Y.*

4812

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PURCHASING

The National Magazine of Industrial Procurement

FEBRUARY, 1948

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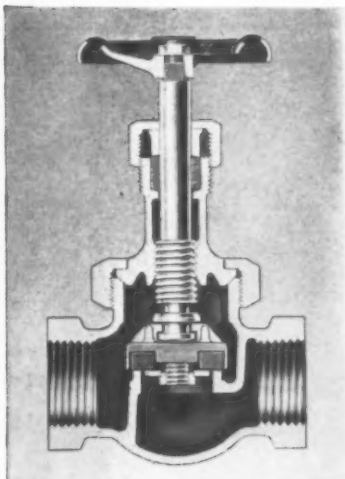

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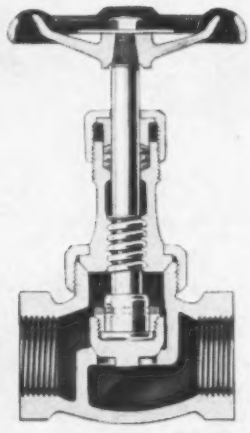

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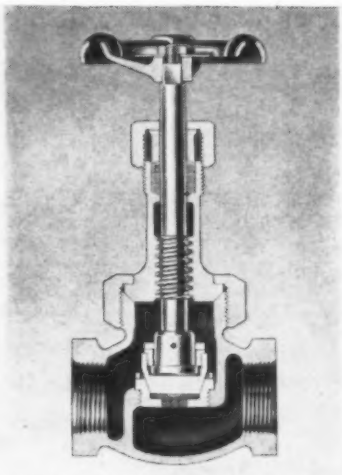

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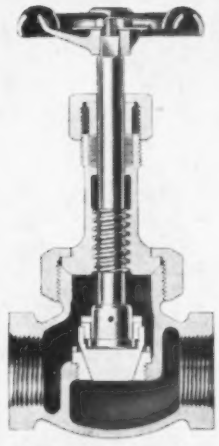

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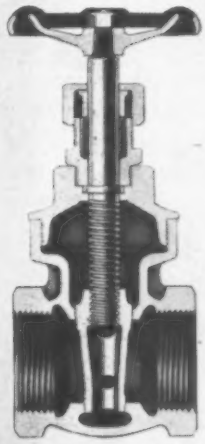

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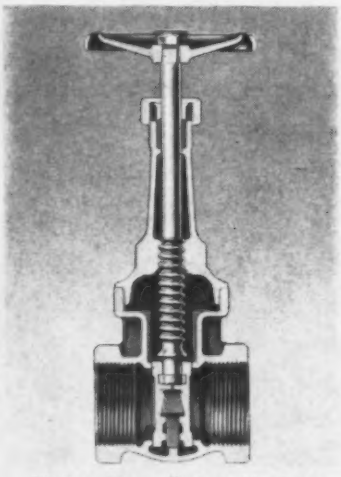

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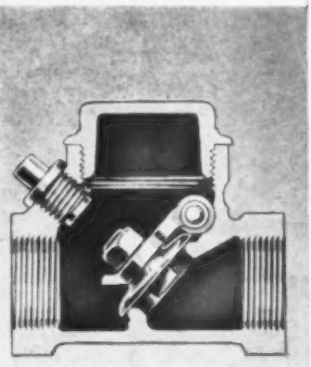

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VOLUNTARY CONTROLS OF BUSINESS

THE CHIEF ISSUE as to ways and means of meeting present problems of supply, demand, and price is, as it has always been, the issue between governmental control and voluntary control. Proponents of each of these systems declare that the other plan will not work, and they are able to marshal a good deal of discouraging evidence and experience to support their respective arguments.

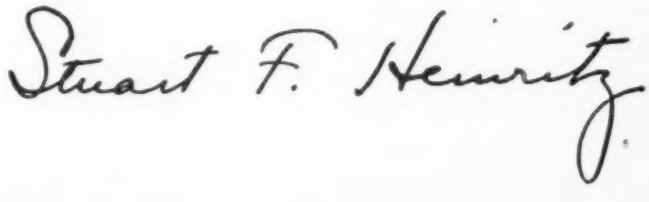
Neither form of control can long be effective if it concerns itself arbitrarily with results and ignores the factors that are fundamentally responsible. Such action may, superficially and temporarily, achieve the desired end, but in so doing it sets up additional and cumulative stresses that will assert themselves in the long run and intensify the unbalance.

The relaxation of anti-trust laws and fair labor standards is not the answer. That merely opens the way to excesses in other areas and sacrifices controls that have been evolved in the public interest, setting the framework of policy within which our business economy must operate.

Voluntary regulation of business is criticized as "having no teeth". Yet the history of government regulation also shows a large factor of non-compliance. Chiselers and violators cannot be legislated out of existence, but if the great majority in the business community are agreed in policy and action, on a reasonable and equitable basis, a workable balance can be achieved.

Voluntary control means self control. It is a matter of motive, and therefore a moral issue. The consumer who demands more than a fair share of available supply, the company that seeks an unreasonable share of the business, the shareholders or workers who demand an unreasonable share of industry's dollar, are equally at fault.

In this moral issue, a high standard of purchasing ethics can be an effective factor. Steadfast refusal to deal in black markets, support of legitimate channels of distribution and legitimate profit margins, a firm sense of responsibility in getting value for the company's dollar, and the development of sound mutual relationships with suppliers, will help business in general to keep a difficult situation from getting out of control — or from getting into a type of control that might be worse.



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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

What will be the Purchasing Agent's **Postwar Status** in industry? Is it true that the recognition he won for wartime achievement is only a temporary phase and that the significance and prestige of his function will decline now that the war is over? That argument is being used in some quarters today to discredit purchasing men, but the facts do not substantiate it. The article on page 91 analyzes the trend in management organization and industrial concentration, the economic problems of transition from wartime to civilian production, and the real meaning of competition. On every count, the outlook is for a continuing advance in the need for better purchasing and the appreciation of its part in profitable management.

The monthly survey of purchasing opinion, reported on page 97, concerns the current high levels of **Profits and Prices.** Are they unreasonable? Could prices be controlled by regulation of profits? Does today's purchasing policy reflect any widespread price resistance? These are questions of importance to business and to buyers. Check your own opinions against the summary of replies received from other readers.

With fuel and power sources under careful scrutiny in every field of industry today, there is unusual interest in recent developments in **Gas Turbines.** The essential features of this type of equipment, which is finding useful applications in locomotive, marine and industrial fields, are reported on page 136. Keep up to date on the possibilities of this modern power source.

Frequent inquiries are received by the editors for additional examples of what representative companies are using in the way of **Reception Room Booklets.** Several specimens of such goodwill builders are reproduced with the article on page 114. If your company is contemplating the use of such a booklet, you will find some practical suggestions in this story for the compilation of a suitable message of welcome and assistance to the salesmen who call at your office.

Despite the fact that **Silver** has properties that could make it one of the most useful and versatile of metals for industrial applications, its use has been limited because of a very unsatisfactory price condition. The forces of national and international politics exert a dominating influence upon this market, and its wide fluctuations have been exaggerated by the psychological public reaction that is natural when currency factors are concerned. Ned Cady's article on page 101 gives a comprehensive picture of the silver situation.

This month's **Guest Editorial** presents the N. A. P. A. Vice President for District No. 6. With a series of searching questions, Lev Anderson focusses attention on the proper approach to purchasing responsibility.

The requisition is supposed to tell all about a proposed purchase, but the buyer who is content to rely on this information can never be sure that he is doing the best possible job. His knowledge must go beyond the written description of a product to its use and the reasons for its use, and the various other products that might be used to even greater advantage. Therefore, says George Fay on page 99, it pays to **Be Inquisitive.** It will pay you, too, to read his article suggesting directions in which curiosity may profitably be turned.

In times of uncertainty and change, purchasing agents must give close attention to the business barometers that present the broad view of conditions and trends in commodity markets. The most significant of these indicators are summarized for you in the insert section entitled **Where We Stand,** with pertinent comparisons to show the current course of business. Turn to page 123 for a quick review of this important data. Of similar timely interest is the compilation of prevailing **Lead Time** on typical industrial products, based on current reports from manufacturers (page 139).

Two complete **Purchasing Systems** are described in this issue, with copies of the key forms used. In one of these (page 107) the possibility of subcontracting is a major consideration, while in the other (page 129) the greatest emphasis is on the coordination of procurement and materials control.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 150) will help you to keep up-to-date on these matters.

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Do You?

• *By L. A. Anderson*

IT IS close enough to the beginning of 1948 for us to pause and take inventory of our own capabilities and practices; and if they are not satisfactory, we can still resolve to correct our faults. How many of us are so self-satisfied that we and our purchasing departments are rapidly becoming antiquated without knowing it? Ask yourself these few questions, compare your department with others, and you may be surprised.

Do you demand cooperation from other departments without giving them the cooperation of your own department, or do you work as a well organized team for the benefit of your company? Common sense tells us that without Sales, there would be no purpose in our procuring anything. Without Research and Engineering, we would not know what to buy. Without Planning and Production Control—bills of material and definite operating schedules—we would know neither "how much" nor "when" of our requirements. Without Receiving, Inspection, and Stores, we would never know the quantities and condition of materials received or where they could be stored until used. Without Traffic to help us pick up our material and without Accounting to pay for our commitments (and another most important factor, to pay our salaries), we just could not function properly. We need them badly; they need us. All-out cooperation is the answer.

Leverett A. ("Lev") Anderson is Director of Purchases for the Twin Coach Company and its subsidiaries, with headquarters at Kent, Ohio. He is currently serving as Vice President and Financial Officer of the National Association of Purchasing Agents, representing District No. 6, which includes the Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo, Tri-State, and Valley (Youngstown) Associations, with Erie on the waiting list. His purchasing experience, which dates back to 1933, when he was a youngster of twenty-six, has been exceptionally varied both geographically and as to type of enterprise, so that he was an active member of the Governmental and Public Utility groups of N.A.P.A. prior to his present connection with the automotive industry, and has the unusual distinction of being a Past President of two Associations—Louisville and Akron.

Lev is a product of the public schools of his native Kentucky and the University of Practical Experience. Left fatherless while still in grade school, he learned the lessons of industry and self-reliance at an early age. After the usual exploratory ventures into various types of business, including the retail grocery trade and theater management, he found his true calling when he became Assistant Purchasing Agent for the City of Louisville in 1933. His aptitude and ability in that position were quickly recognized, for in 1936, not yet out of his twenties, he was given an extended leave of absence from the City Buyer's office at the personal request of Governor A. B. Chandler to assist in the reorganization of the State Purchasing Department at Frankfort.

He joined the Louisville Association in 1935, and was elected Vice President the following year. In 1937, he was serving as president of that organization. In 1939 he was appointed Purchasing Agent of the Louisville Water Company.

The switch to manufacturing industry took place in 1941, when George E. Price, Jr., of the Goodyear Tire & Rubber Company, invited Anderson to come to Akron as a buyer in the Goodyear purchasing department. He has been with the Twin Coach Company since 1945. He was president of the Akron Association in 1944-1945, and briefly renewed his contacts with municipal purchasing as chairman of a special committee appointed to make recommendations for the City Purchasing Department at Akron.

Civic-minded and service-minded, he is an officer and active worker in the Presbyterian Church and in the Boy Scout organization. Bowling, golf, and fishing head the list of his recreational activities. First place in his personal interests, however, is reserved for his family, which includes his wife Dorothy, a southerner like himself, and two children, Leverett, Jr., and Emily Sue.

Do you take all credit, as head of your department, for the accomplishments of your assistants, or do you give each individual the credit due him or her? The word "we" works much better than the word "I". As far back as I can remember, no one has ever "worked for me"; they have always "worked with me". And just in case you have never found out, there is a great big difference.

Do you retard the progress of your assistants, or do you teach them everything you know about the job, and attempt to learn from them as well? Too many of us are fearful that our assistants will nose us out of our positions, and that unless we hold them down our own future may be jeopardized. Too few of us realize that unless we train someone to take our places, there is little likelihood of an advance in our own positions. We must sponsor an educational program within our own departments as well as in colleges and in Association meetings.

Do you sit in your office all day, or do you visit and talk with foremen and workers in your plant? In our close association with our top executives, and because in many cases we ourselves are in the executive group of our companies, we sometimes lose sight of the valuable relationship that should be maintained between the procurement officer and the persons who use the materials he buys. The users can help us all so very much by making comparisons of quality and suitability, and by making suggestions for improvements that will make us better buyers and save many dollars.

Do you accept requisitions as they are sent to you, or do you really search out better things to buy to fulfill the requirement? Of course it is much easier to follow the line of least resistance and be an "order placer", but it is a challenge to all purchasing agents to do a better job each day by doing active research on items we now use and items we might use to better advantage if operating departments knew that such items exist. New frontiers are ever present in our profession; we shall never recognize them by watching each day fade into yesterday.

Do you leave public relations entirely to your Sales, Advertising and Public Relations Departments, or do you do your share? We can make as much money for our companies as our Sales Departments can. By the same token, we can make just as many favorable contacts, too. There are many different ways in which we can help our companies become well known and well thought of, so that new vendors and new customers will come to us, to our mutual advantage. Are representatives of other companies glad to get away from your office after a call, or do they look forward to the next visit?

Do you wait for vendors to make the first call, or do you make it a practice to visit a potential vendor's plant? Our war experience has taught us the value of knowing a vendor's facilities and personnel, and we can do this only by plant visitations. Not only do we get the best quality for our requirements, but deliveries which are urgently needed are more apt to be on time, or at least closer to the required delivery date. It is also true that it is much easier to talk to a person over the telephone once we have met him. The more people we know, the more material we get when we need it.

Do you pride yourself on being a hard-boiled buyer such as Elbert Hubbard defined, or do you belong to the newer school of progressive and constructive purchasing executives? Some, not all, of the old-timers held to the psychology that to let a salesman cool his heels for an unconscionably long period would lower his morale and resistance to such a point that any suggestion from the purchasing agent would be accepted without argument. Fortunately, this type of purchasing agent is rapidly passing into oblivion. The sooner we realize that the salesman's time is just as valuable to his company as our time, the better off we all shall be.

Do you feel that you are too busy to see a new salesman, or do you make yourself available whenever possible? Have we ever stopped to think that salesmen are really our livelihood? Without salesmen there would be no sales, and without sales there would be no buying, and without buying we would be without a job. And what would become of our jobs if the customers refused to see the salesmen of our own companies? That is a pretty basic consideration; don't let it escape you.

Do you know more than the salesman calling on you, or do you allow him to tell his complete story? It may be a liberal education for us to listen, because the salesman knows his wares from A to Z or he wouldn't be selling. Do we know everything about all the materials and products we buy? I'll answer that one. We do not, or else we should be making very handsome incomes as sales executives or owners of the business. Let's not kid ourselves. That salesman can be of untold assistance to us if he is cultivated in the right manner. He can and will keep us abreast of the times —prices, trends, new developments and new applications.

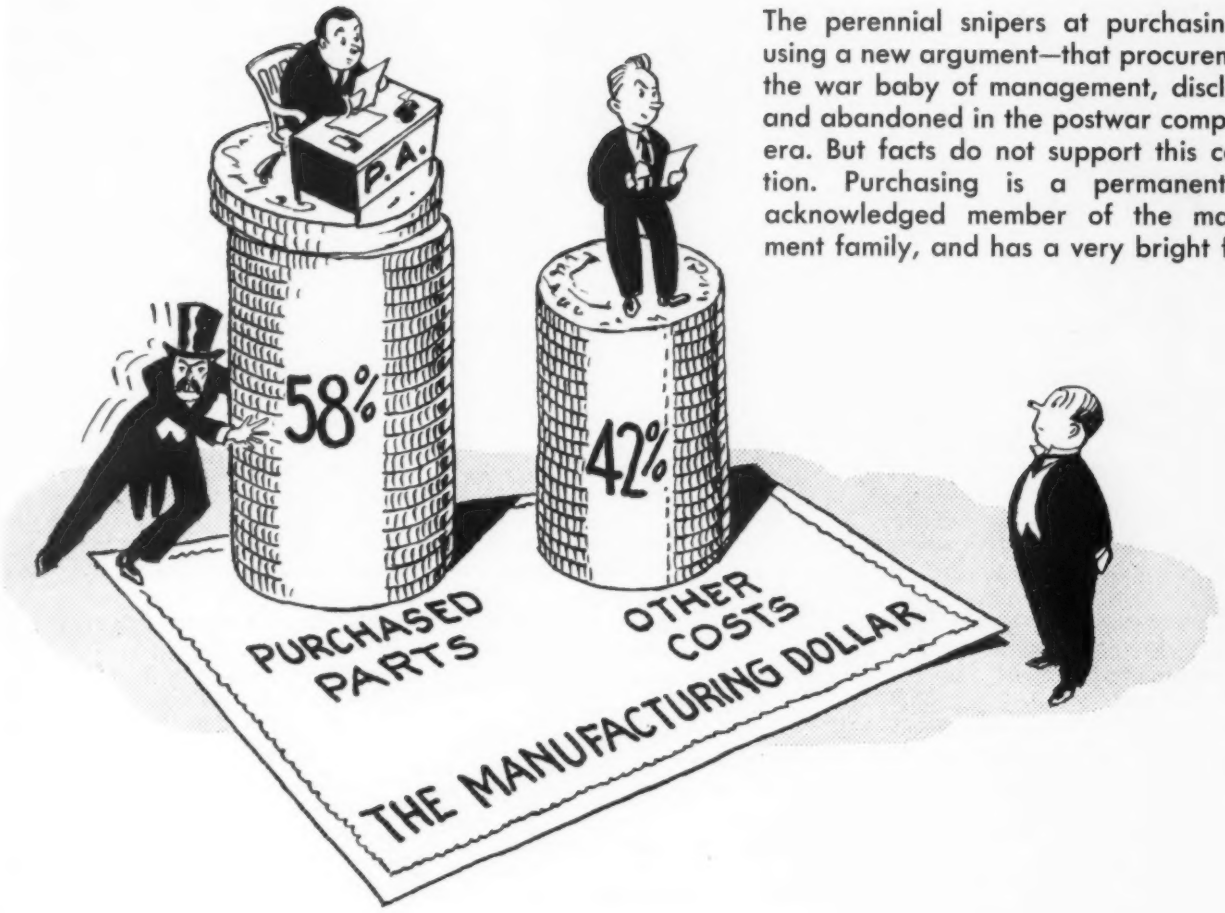
Do you invite a salesman to lower his prices after he has once quoted, or do you make him stand or fall on his quotation as originally given? There are differing schools of thought on this practice. Some buyers, in their zeal for lower costs, make use of the whittling method. In my own philosophy of buying, "the first price is the best price". If a salesman can lower his price, he wasn't very honest in quoting a higher price in the first place. That kind of salesman should not be tolerated, but it must be admitted that many of us contribute to such action by accepting subsequent lower prices. We may gain on one such transaction, but you can bet that we will lose on many others. We may get a better price, but we can never be sure that we have received the best price. We are in effect inviting the salesman to add a margin for bargaining. The first instance may be a "good buy", but the next and all after that will be "Good Bye".

Do you remember that we purchasing agents are discussed pro and con in Pullman cars, hotel lobbies, clubs, and even in our own reception rooms. Our reputations, good or bad, are batted back and forth in endless discussions. Once we are known as price chiselers, or for playing one supplier against another, or for any borderline standards of ethical practice, we might as well resign our positions so far as commanding the respect of the people with whom we transact business or doing an effective job for our companies.

Do you believe that no matter what you think or do, you are in the right, or do you honestly feel that the other fellow may be right too? We should always have faith in ourselves, but not to the extent that we believe we can never be wrong. To withstand the strain of purchasing we must be healthy, but we must also be 4F—Fair, Factual, Friendly, and Firm. Read, believe in, and practice the Code of Ethics of your profession. And regardless of race, creed, color, or position, practice the Golden Rule. It works just as well in everyday business as in our moral life. It pays dividends. "Do unto others as you would have them do unto you."

Do you?

POSTWAR STATUS OF PURCHASING



The perennial snipers at purchasing are using a new argument—that procurement is the war baby of management, disclaimed and abandoned in the postwar competitive era. But facts do not support this contention. Purchasing is a permanent and acknowledged member of the management family, and has a very bright future.

By Stuart F. Heinritz

GOOD management practice is not static; its constant objective is to adapt organization, procedural and administrative methods to meet current conditions and requirements most effectively. This calls for flexibility and involves changing policies as business and economic conditions progress from one phase to another. Along with change, there is development, for the meeting of new problems constitutes a laboratory in which new techniques and new functional relationships are tested.

Experience, trial and error—and, more particularly, trial and success—continually add new management tools of permanent value to executive equipment, comparable to new technological information and improved mechanical equipment, to be used and applied as circumstances indicate. It would be difficult to name a single function in the whole field of business administration, even in the mathematical aspects of accounting science which would seem to be fixed and unalterable, where significant developments of this nature have not taken place during the recent years of extraordinary economic and industrial stress. Consequently it is fallacious to assume that there is any set managerial formula applicable to any given set of conditions that may arise, and sheer folly to proceed on the assumption that management policy and methods will return to the settled routine of any previous period.

Considerable attention has been devoted to the wartime developments in purchasing science. The technique of scheduling, applied to lead time, expediting, and materials control; the handling of allocations and price adjustment clauses; the entire subject of purchase analysis; centralized control of decentralized buying for multi-plant operations—these are among the techniques that have grown out of wartime purchasing experience and have become a part of every purchasing man's professional equipment. Whatever conditions may henceforth arise, whether of war or peace, scarcity or plenty, buyers' or sellers' markets, no purchasing policy or decision will be put into effect without the consideration of these factors.

It is high time that a similar examination should be directed to the position of the purchasing function in the over-all company organization and policy. This is important, first of all, because of the intrinsic interest of the question in view of the indubitable fact that the transition from a wartime to a postwar economy represents a major change in the conditions of doing business. It is particularly important now because of the tendency in some quarters to regard the greatly enhanced status of purchasing in recent years as a "war baby" in the field of management, that should be discounted now in merchandising and operating

The development of purchasing as a vital and recognized function of industrial management shows a steady advance —prewar and postwar.

plans. It is fair to raise that question, but it is essential that a factual answer should be found, rather than relying on assertion and innuendo, for it is neither a rhetorical question nor a matter of mere opinion.

The contention that purchasing will revert to a status of lesser importance is based upon the argument that (1) the conceded advance in purchasing department influence at the beginning of the war and continuing throughout the period of active hostilities was an abnormal development and therefore subject to correction, (2) the extraordinary problems and requirements of wartime procurement that justified the attention given to purchasing in those years no longer exist, and (3) normal competitive production and selling efforts, which were necessarily suspended in the war years, are now beginning to reassert their role in the distribution process which purchasing temporarily dominated by default.

Since the facts of the current situation do not support this interpretation of business policy, it is being put forward as a prediction. There are cryptic references to "the handwriting on the wall", as though the premise and its corollaries were so obvious as to require no further proof. That is a neat way—and a cheap way—of avoiding responsibility for a positive demonstration. In other respects it is rather an unfortunate figure of speech. In the original, Biblical version of the story, the writing on the wall was so enigmatic that there was only one man in the whole kingdom of Chaldea who had the faintest idea what it foretokened. And in modern practices, the handwriting on the wall, while generally less subtle, is universally recognized as one of the baser forms of self-expression—certainly not to be taken in any serious, scientific vein. Since the question is one that demands a serious answer, we shall do well to examine these arguments more critically and objectively.

Let us review them in order.

Is Purchasing Inflated?

It is quite true that the prestige and influence of the purchasing function zoomed upward in spectacular fashion in the early days of the war, completely upsetting the previous balance of functional relationships in industrial management. The reasons for this phenomenon are plain: sudden, imperative demand growing out of the war requirements, accompanied by critical shortages of all sorts of materials, products, and supplies. The tremendous expansion of production to meet this demand, at the same time increasing the drain on available raw materials and supporting industries, served to intensify these factors. The war years became an era of procurement, as the first and essential phase of production, and the purchasing executive became the key figure in the plans and in the performance of virtually every enterprise, whether a manufacturer or a consumer.

Now if the prewar functional relationships are accepted as "normal", it is easy to argue that the enhanced significance now attached to purchasing is abnormal—a sort of inflated status that will naturally be followed by the predicted deflation. This conclusion of course involves the very questionable assumption that industrial conditions generally will return to prewar standards.

Fortunately, we do not have to rely on conjectures of this sort, for the whole situation, including the effects on purchasing prestige and significance, is by no means without precedent. Almost exactly the same sort of development occurred in connection with World War I. At that time, purchasing emerged from virtual obscurity, or no status at all, to a position of general recognition as an independent function of management with an identity and professional consciousness all its own, instead of being absorbed in and subordinate to the function of production.

If anything, the "inflation" of purchasing thirty years ago was more spectacular and startling than the present development. Yet it was followed by no process of deflation. Rather, those gains were held and a period of consistent development and progress ensued at the new level, continuing through a variety of industrial and economic conditions, until the outbreak of World War II and its attendant demands on the nation's industry gave a second extraordinary impetus to this development. More than two years have passed since the end of the military emergency, and there is every evidence that the pattern is being repeated, with the acceptance and functioning of purchasing going forward and upward from the wartime level. If there is anything "corrective" in this situation, it would appear that the whole process of development in purchasing is working toward a new functional balance in correction of earlier fallacies.

Underlying Trends

Viewing the history of industrial management over the past thirty-five years, we see a steady growth in the significance and appreciation of the purchasing function, marked by two periods of extraordinary acceleration, but with no interruption of the general trend or direction. There is a close correlation in this with the trend toward the concentration of manufacturing industry in large units—a trend that has occupied the attention of both private and governmental economists throughout the period.

This correlation is natural, for centralized purchasing is a device of large-scale operations and administration, and is one expression of the

functional specialization that characterizes such growth. The current concern for "small business" and its place in the national economy emphasizes the fundamental nature of this trend and the probability of its continuation. Legislation to curb the economic and social abuses of bigness has not halted the fact of industrial growth and concentration. Mass production, and mass distribution to mass markets, requiring ever larger resources and investment in plant equipment and working capital are at the very root of the American industrial system.

There may be a limit beyond which bigness in itself will become uneconomical. Until that point is reached, we may confidently expect the trend toward larger industrial units to continue. Whatever the limit may be, it is decidedly on the big side—big enough to demand effective centralized purchasing as an integral part of the operation and administrative policy. And that is the significant consideration in this analysis.

There are several factors that indicate an ever greater relative importance for the purchasing function in this continuing process of development. One of these is centralized control over administrative and staff functions for decentralized operating units in a multi-plant organization—industry's antidote for the disadvantages of bigness without sacrificing growth. Another is the trend toward greater specialization in manufacture, leading to a situation in which a greater proportion of fabricated parts and subassemblies is coming under purchasing's responsibility and jurisdiction. Overall statistics for comparison on this point will not be available until the completion of the next Census of Manufactures, but the experience of individual companies and industries is known. In a leading automotive company, for example, purchased materials and parts, prewar, accounted for about 50% of manufactured product cost. Today, purchased components account for 62% of manufactured cost in that company, and the percentage is still rising.

It is scarcely necessary to add that the status of purchasing would not have kept pace with this basic development, as it has, unless the science and the accomplishments of purchasing had progressed correspondingly, to meet the increased demands placed upon it. The purpose and the means must progress together. A comparison of purchasing methods today with those of 30, or 20, or even 10 years ago, clearly shows the advances in purchasing know-how and scientific techniques that have taken place.

This, incidentally, explains the two great periods of acceleration in purchasing progress. They are related to the historical event of war basically because the wartime problems of industry caused management to demand more of the purchasing function and because the very difficulties of overcoming these problems of supply spurred the development of new procurement techniques and provided the laboratory for testing and improving them. This experience is not peculiar to purchasing. Scientists tell us that because of the extraordinary wartime demands, twenty-five years of "normal" technical progress were compressed into the space of five years; and we do not expect to discount or disregard this progress and return to prewar technologies that have already been rendered obsolete.

Quantity or Quality

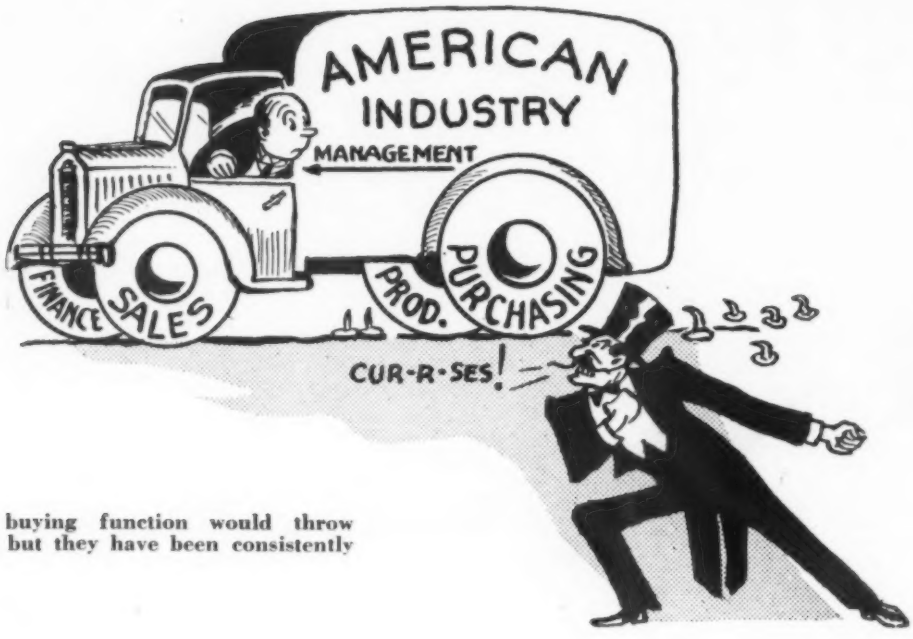
Those who predict a decline in purchasing influence may predicate their argument in part on the quantitative factor of personnel engaged in purchasing work, and this is certainly a factor that should be examined. It should be examined, however, on its own merits, and should not be confused with the functional aspects of the question.

There was a tremendous upsurge in the number of people engaged in purchasing during 1939-1941. The most conservative estimate is that this number doubled, and it might be closer to the fact to estimate that the number tripled during this period. Many purchasing departments could be cited that grew to three or four times their prewar size with the advent of war, besides the sudden appearance of scores or hundreds of wholly new purchasing departments in new war industries. The contraction of personnel was as abrupt. Current estimates based on the best available data indicate that the purchasing population today is approximately back to a point corresponding to the normal line of growth at a rate of roughly 5% per year since 1939—still speaking numerically.

As a matter of fact, the most rapid contraction occurred during 1942, when the plant construction and equipment phase of the War Production program had passed its peak. This is significant because it indicates very clearly that the numerical measure of purchasing, in its sudden rise and fall, is almost altogether a peak-load phenomenon, corresponding, for example, to overall employment in the airplane manufacturing industry. The purchasing assignment had an early wartime peak load in the special projects of construction and equipment of plants for war production; a peak load of volume of operations for the duration of the war; a peak load of difficulties that were not only due to wartime shortages but also to the fact that in converting to war production buyers were frequently dealing with unfamiliar materials and products, so that precedent and the advantages of established contacts and sources were lacking. And finally, there was a peak load in related responsibilities that came under purchasing department supervision, the obvious examples of this sort being the maintenance of priorities divisions and large expediting staffs. When these temporary peak loads were disposed of, it follows as a matter of course that the extra personnel was no longer necessary. This has nothing whatever to do with the development and progress of the basic purchasing function.

There is a numerical measure which has a more logical bearing on the question under study, and that is the membership of the National Association of Purchasing Agents. This is a good indicator for several reasons. Because the qualifications for membership are rather strict, it is representative of the purchasing function itself and of company organization that recognizes the independence and the significance of that function. Since multiple company memberships are a negligible factor in the total, it is representative of the number of companies where such recognition prevails, rather than the peak-load purchasing personnel within these companies. And because the overwhelming majority of memberships are paid for by the company and not by the individual—approaching the Ivory Soap standard of 99-44/100% in this respect—it is representative of management's deep and practical interest in the progress of purchasing.

The membership growth of N.A.P.A. was accelerated in the war years, though in no such spectacular degree as the overall increase in purchasing personnel. It was quite generally assumed that there would be a falling off of membership at the end of the war, due to the mortality among industries of the "war baby" type and perhaps the business mortality of some purchasing men who



Efforts to deflate the buying function would throw management off balance, but they have been consistently unsuccessful.

might be similarly classified, or less inclination on the part of management to assume the costs of memberships as "business expense". Doubtless there have been some instances of this sort, perhaps even a considerable number, but the overall picture is entirely different.

N.A.P.A. membership growth has consistently shown an increase of between 5% and 10% each year since 1939, *including the two and a half postwar years.* At no time has there been an interruption in this progress, nor any sign of a decline. Current membership is at an all-time high, close to the 11,000 mark, as compared with about 7,500 members in the first year of industrial mobilization and an even 10,000 at the time when General MacArthur accepted the capitulation of the Japanese on the deck of Big Mo.

New Problems for Old

The conclusions to be drawn from this are that the field of centralized purchasing is soundly established and steadily expanding; that it is penetrating more deeply into the classification of medium sized industries as an accepted principle of management adopted from large-scale operations; that the independent status and authority of the purchasing function has the broad endorsement of top management executives; and that the professional progress which must support this wider recognition will be continued through the cooperative activities and interchange of experience that constitute the Association program.

The essence of the whole question lies in this correlation of a fundamental management trend and the functional responsibility of purchasing—a correlation that promises increasing significance for the purchasing role rather than waning influence, for the immediate future as well as in the long range view. The other arguments to the contrary are corollary to a false assumption on this major point. In going from the general to the particular, they merely reiterate details of the major premise that purchasing prestige is an ephemeral creature born of war, destined to perish as soon as the hot fires of that incubation have been quenched. The extraordinary hardihood of this creature through the first stages of the postwar period must be explained away if that premise is to be sustained. So the arguments are clothed with a semblance of timely allusions to create the illusion of fact.

But whatever superficial credibility these arguments may generate stems from the purely psychological effect of a decreased rate of acceleration which does not, however, change either the force or the direction of the trend. A parallel type of thinking was cited in these pages last March, when we cited two headlines from a reputable business newspaper. "Store Sales Begin to Skid" was the caption for a report that department store sales had advanced only 20% over the corresponding period of a year ago, as compared with a 33% advance in the previous period. "Inventory Rise Rate Slackens" introduced the story that manufacturers' inventories had increased by only 300 million dollars in the previous month. In both cases, the impression was given that a trend had been checked or reversed. The fact, however, was that in the one case a condition was getting better but was not improving quite as fast as before, and in the other case a bad situation was still getting worse, but not deteriorating quite so rapidly.

You get something of the same feeling when driving westward on the parkways from New England to New York and cross the state line from 55 m.p.h. Connecticut to 40 m.p.h. New York. You throttle down the car (there's a trooper and a motorcycle strategically parked at the line) and your itching toe suggests that you are practically going into reverse, though actually you are still going forward at a reasonably fair pace toward the original objective.

So the war is over, and the extraordinary wartime acceleration of purchasing progress returns to a more normal rate. It is still progress, a normal development of management and administrative and operating technique that cannot be disregarded in the pattern of industrial distribution.

The argument that the ending of the particular problems of supply that are associated with the war automatically terminates the need and justification for a strong purchasing department, can only be based on a complete disregard of business conditions and a complete misconception of what a purchasing department is for. Conceding the effectiveness of wartime procurement in overcoming the difficulties of shortages, its ingenuity in developing new sources, and its tena-

cious, round-the-clock follow-through that somehow kept the wheels of production turning, this argument sets the purchasing function up on a pedestal of circumstance in order to knock it down. But the pedestal remains; it is only the uniform and the flag, the glamorous panoply of war, that have been removed.

Changing Emphasis

Purchasing, like every other industrial function, must adapt itself to the conditions under which it must operate at any given time. Wartime had its special problems, to be sure, motivated by a special sense of urgency in the national emergency. Wartime procurement surmounted those problems. But the general comment on wartime procurement is that it wasn't real purchasing at all. When available supplies are officially channeled to particular uses, when cost is lightly regarded as a factor of value or of operation, when competition disappears because sales volume is a matter of capacity rather than of efficiency, when quality standards are subordinated to expediency and substitution is accepted as a matter of capacity rather than of efficiency, when quality standards are subordinated to expediency and substitution is accepted as a matter of course, the basic objectives of purchasing grow dim indeed, and there is little opportunity for the buyer to exercise his purchasing skill or for his company to benefit from it.

In the postwar business world, all of these factors—purchasing factors—have regained their prewar significance, but the physical and economic difficulties of the wartime era still persist to complicate the procurement task. The shortages of basic materials have not been overcome; the outside drain upon our supplies and facilities has been replaced by a drain for domestic stockpiling and foreign aid; production is still short of domestic demand, and demand has burgeoned to global proportions; higher costs in the form of taxes, fixed charges, and wages, are firmly entrenched at or above wartime levels; all the excesses of wartime practice have moved in to live with the industrial economy on a long-term lease.

Black and gray markets flourish, but today they are merely reprehensible, no longer criminal in nature. Without the beneficient aid of priorities and allocations, the elemental responsibility of mere physical procurement is as difficult as ever and a host of new difficulties have been added. The purchasing function is on its own, now, to prove in individual experience and in the mass that the free enterprise system, without controls, is a workable and desirable economic pattern.

It is the motivation that has changed. If our national security, in a strictly military sense, is no longer at stake, the economic security of the individual, the individual company, and, collectively, the entire system of private enterprise, are definitely concerned. In a very real sense, sound purchasing practice and accomplishment constitute the first line of defense against the menace of inflation, of rising costs and declining standards of living. The maintenance of quality and of favorable costs will go far in determining the competitive position of a company in its industry, and perhaps its very existence; an adequate flow of materials to support full production will frequently make the difference between black ink and red on the balance sheet; good products and service at reasonable cost will be major factors in building and retaining the good will upon which business progress for years to come may well depend. It would require a very fine sense of discrimination to assay the relative gravity of the military and the economic emergencies, and to say that the need and the incentive for sound procurement are less urgent today than three years ago.

Sure, the war is over. Now, if ever, management must look to competent purchasing as one of its most effective means of achieving profitable operation.

The Return of Competition

The third argument—that the return to competition, as goods become more plentiful and have to seek their markets, will minimize the need for aggressive purchasing in search of goods—fails to follow through to a logical conclusion. For if we stop at that point, we fail to take cognizance of the fact that the whole science of purchasing is predicated on the existence of competition between alternative means or sources for satisfying a need. The return of competition means that a buyer, whether an individual consumer or the purchasing agent for a great corporation, will have a choice between competitive products. The primary assignment of the purchasing officer then changes over from a problem of search to a problem of selection, and that is exactly where skillful and scientific purchasing assumes its most important role.

There are many evidences that competition is gradually coming back into the business picture, as predicted, though the transition may still require many months for its completion. No one welcomes this development more whole-heartedly than the purchasing agent, whose function is to determine which one of several available products is likely to prove most satisfactory and most economical for his company's needs. And on that decision hangs the welfare not only of his own company, but of his potential suppliers. Neither party at interest can afford to disregard or to discount this fact. The prosperity of a business enterprise is not measured by the overall experience of its industry, but by the extent to which it shares in that experience. In a competitive market, the game is played under the rules of buyer's choice.

A Major Responsibility

Traditionally, the purchasing agent has been told that his responsibility is to procure the one right material, in the right quality and quantity, at the right time, at the right price, from the right source. During wartime, and in the postwar period to date, these specifications have frequently had to be modified or qualified by substituting the "best available" for the "right", but the return of competition promises that this compromise may no longer be necessary.

The revival of competition in production and sales does not alter this definition of purchasing responsibility or replace the need for keen purchasing judgment and skill. It merely provides the setting in which the purchasing officer can do a better job and a more important job for his company.

Don't sell purchasing short. The buyer's function is steadily growing in significance as a factor in management policy and industrial operation. Equipped with the added knowledge and experience acquired through meeting the problems of wartime procurement and the equally challenging problems of two and a half postwar years, purchasing men are ready to face the greater responsibilities with greater confidence and effectiveness than ever before. The return of a competitive market may well mark the dawn of opportunity to capitalize most fully on the potentialities inherent in the buying function. Competitive American industry and progressive management can be relied on to welcome the knock of that opportunity. Profits are not left to languish on the doorstep.

ANTICIPATORY BUYING

Planned purchasing is better purchasing and the potential savings are impressive

By C. G. O'Neill

CURRENT prices and market conditions *insist* that each and every phase of purchasing be explored to maintain consistent production at the lowest possible cost to the ultimate consumer. One important phase of purchasing frequently neglected in some companies is that of anticipatory buying.

Many companies have unwittingly gained a reputation in the trade for placing large numbers of orders for small quantities of materials. Such practices may remain obscure within the company unless a monthly average for all purchase orders issued is determined. Once such an average is established, it can be used as a criterion in a constant effort to increase this average over that of the previous month.

For example, the X Manufacturing Company purchased $1,382,000 worth of productive and non-productive materials in one month. This procurement was accomplished by issuing 3,350 purchase orders; the average purchase order for that month was $412. The Y Manufacturing Company purchased $1,500,000 worth of materials in one month. Since their average purchase order was $68, more than 22,000 purchase orders were issued and processed in handling a comparable volume of business.

Not including the internal paperwork expense involved in issuing many orders, the advantages of anticipatory buying measures employed by the X Manufacturing Company enabled them to support their manufacturing, distributing, and selling programs with a lower unit cost.

Although it is true that when production, as such, is up and quantities of production materials are purchased, the average purchase order will increase, however, if intelligent anticipatory buying is applied to non-production materials, it is possible to narrow this spread between the two classes.

In order to increase this monthly average, it is necessary to analyze all purchase orders for specific commodities. To illustrate, the Jones Company purchased in one year from the Smith Supply Company 158,349 motors covered by 121 purchase orders. The price of each motor was $1.50. The purchasing agent made a survey of purchases from that vendor for the year and, armed with these facts, negotiated for a current year's requirements. The result of this negotiation was that the supplier, although their current price was still $1.50 in small quantities, offered a price of $1.04 each in quantities of 50,000 or more, with a retroactive agreement that if the quantity exceeded 50,000, the price would be $1.

Again, making a survey of a more common commodity, this same purchasing agent realized that his company was purchasing nuts in lots of 1,000 at a price of $6.73 per M, even though their year's requirements were well in excess of 2,000,000. A new quantity price was negotiated for the year's requirements, which resulted in the low comparative price of 70¢ a thousand.

It is obvious, therefore, that the penalty for small quantity buying is a serious one from a financial standpoint alone, as the extra costs can range from 7% to 800%, representing potential savings that can be earned through foresight and planning in the purchasing program.

When long run quantities are placed with a supplier, the advantages to such a supplier force him to respect and value the account. Such relationships protect companies against those suppliers who, in their short-sightedness, are willing to take an unfair price advantage during a shortage period. In addition to this protection, the relationships enjoyed through "planned buying" establish a two-way street in exchange of valuable information.

Where should the responsibility for anticipatory buying be placed? Since such buying requires a knowledge of a company's long-term requirements and intensive negotiation with proven suppliers, it naturally becomes a function of the purchasing agent. No program of this nature, however well conceived, can be effective without the unqualified approval of management. This approval should stipulate a provision for the all-important element of "time to negotiate". Much of the potency of good planning is lost if the purchasing agent is not given ample time to negotiate his requirements fully. In fact, it might be a good practice to imprint on all internal requisition mastheads this statement . . . *Give us time to negotiate . . . There is no substitute!* Quite frequently such negotiation will result in the modification of the requisitioner's requirements to the extent that a part standard with the supplier is used, thus establishing another item for anticipatory buying, which means a better delivery cycle, lower price, better terms, and more consistent quality.

After anticipatory buying has been well established, a close alliance must be maintained between the supplier and the purchaser. The supplier should be immediately advised of any anticipated changes that may affect his planning. Once a company gains prestige in the eyes of its suppliers, another advantage makes itself felt. The purchasing agent has, by this action, performed an immeasurable public relations service for his company.

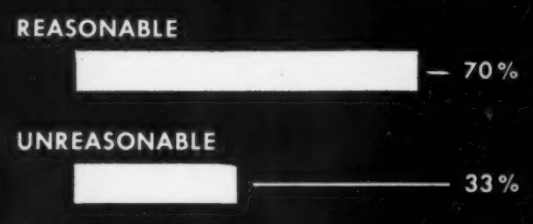
Can we hold the line on PRICES and PROFITS?

Almost every segment of the nation's population has joined in the controversy over current high prices and high profits. Comment from legislators, labor leaders, and business men, grows more excited daily, with the coming national election expected to bring the debate to fever pitch. In an attempt to obtain an objective view of the basic facts in the situation, PURCHASING has gone directly to the men whose function in industry is to procure "more things for more people for less money" — industrial purchasing agents. A cross-section of purchasing executives in all parts of the country were polled. Their opinions on present conditions and possible remedies are summarized below:

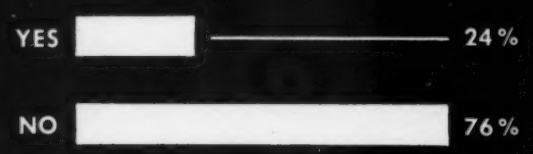
1 Do you feel that the prices you are now paying for materials and products are far out of line, considering the present economic situation of the country?

2 Do you think that the profits your suppliers are now making are reasonable or unreasonable?

Note: Some respondents named more than one choice on this question so percentage factors total more than 100.

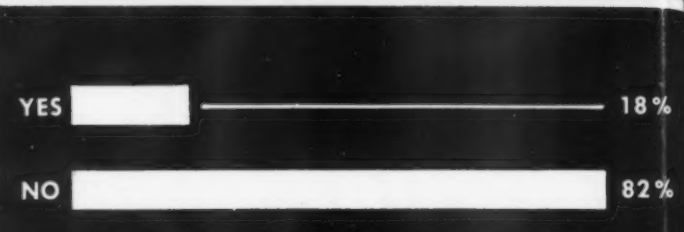


3 In your opinion, will any controlling or restrictive measures applied to profits help to bring prices down?



4 **In view of business experience since the removal of price controls, do you believe that the law of supply and demand can bring prices into balance with consumer income without imposing serious economic hardships ?**

5 **Assuming that present profits result primarily from unusually large volume of sales and high rates of operation, do you think that the present relationship of consumer prices to consumer income is a stable one ?**



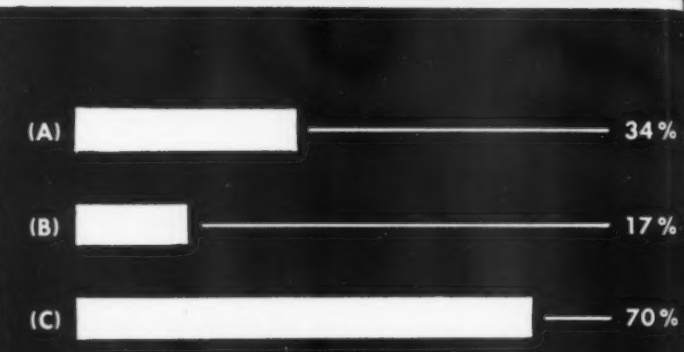
6 **If the answer is "No", what adjustments should be made:**

(A) "Hold the line" on prices, regardless of profit.

(B) Increase wages in proportion to cost-of-living index. ?

(C) Base pricing policies on current costs, and let natural economic law work out a state of balance.

Note: Some respondents named more than one choice on this question so percentage factors total more than 100.



7 **Do your present buying policies reflect definite "price resistance" beyond your normal consideration of the price factor ?**

WHAT THEY SAY

"Because of good business conditions generally and the necessity of keeping sufficient inventories on hand it is difficult to put forth any 'price resistance' to the present high prices of all operating supplies and materials".

"Obviously all sellers are entitled to a fair profit. However, pyramiding should be discouraged, viz. sellers' practice of adding double or triple for labor and materials increases when establishing revised selling prices. This procedure partially accounts for the tremendous excess profits of today."

"Greed seems to be the order of the day."

"Eliminate non-productive, parasitic employment (government is worst offender). Stop management-union merry-go-round. There is no reason to increase the price of bread 20% to compensate for a 20% increase in the baker's wage. Ask industry in general to refrain from trying to collect now the profits they did not make during the period of controlled prices."

"Beyond the normal consideration of the price factor the only other resistance is to use substitutes or not to buy at all. In many cases neither of these two choices is possible."

"This company has not increased prices on major lines since 1941 because of increased productivity per man and improved machinery. Pay highest wages in our 100 year history and gave employes 6½ weeks' pay as bonuses in 1947. Expect greater production in 1948."

"No question that large export shipments are largest single factor in high prices. Higher production and lower exports when feasible should result in lower prices."

IT PAYS TO BE INQUISITIVE

● **By George A. Fay**
Assistant Purchasing Agent
Addressograph-Multigraph Corporation
Cleveland

TOM HOWARD, Lulu McConnell, et al., conduct a radio program known by the rather strange title "It Pays To Be Ignorant". In this particular case, apparently ignorance does pay, but this most certainly is one of the few places where it does, and the purchasing profession is not one of them. As a matter of fact, knowledge, which takes many years to acquire, pays off in purchasing, and knowledge is never gained in any volume without active effort. Continuous research, constant questioning and learning from salesmen and callers as well as from specialists in his own plant, train a progressive buyer to be able to judge values, markets, impending changes, and to know people and personalities. Because he has learned, he knows. Hence, our subject: "It Pays To Be Inquisitive." It pays you; it pays your company.

By this time the much-discussed honeymoon in business is definitely over. Of course, there are still some short items and apparently there will be for some time to come. All is not "milk and honey" in the purchasing department, but again callers are asking for business and again there is competition in many lines. From the buyer's point of view, this honeymoon has not been a satisfactory period. Actually it has not all been pleasant from the sales angle, either. Many salesmen today express the opinion that they are glad the time again has come when the thrill of "knocking off a good order" brings the joy of accomplishment. It is pleasant for them to say, "Yes, we have it, when do you want it?".

This return of the buyer's market puts a definite end to order placing and "get it at any price" practice, and brings back the pleasant responsibility of buying.

While it is pleasant, it is definitely a responsibility, bringing with it more opportunities for savings and improvements than we have ever seen before. New sources, new products, new prices, new uses in our respective plants, all will make possible savings and improvements in the products we make. Research in purchasing is far more important now than ever before, since many of these new things may affect the operation of our plants in one way or another.

If we are on the job, as management expects us to be, we have a tremendous task ahead of us. This knowledge which we speak of above is not to be gained passively. We must compare, inquire, imagine, know, and above all, think. The word imagine may seem out of place here, but imagination is necessary in the purchasing scheme of things and can produce some surprising results not obtainable otherwise. We must know what each item we are required to buy is; where, how, and why it is used.

To the average buyer in the average plant, this very important knowledge of 'what it is' is a sizable order due to the fact that his plant requires numerous items made up of numerous materials. Some industries require only a few raw materials, but in this case a buyer's knowledge should be more complete and comprehensive. Other industries require thousands of items, making it practically impossible to have a complete knowledge of all of them. Here it is a case of knowing well the most important ones, those which require the greatest outlay of money, or finally, those where the knowledge can be transformed into worthwhile savings.

This question, "What is it?" cannot be answered alone through knowing the material or materials from which the thing is made. Rather it implies complete knowledge of its components, their geographical origin, how it is processed or assembled. Naturally, this is not practical on a complicated piece of machinery which is purchased only occasionally nor on capital equipment items. Specifically, we refer to items of a repetitive nature used constantly in production or factory maintenance. In the typical purchasing department, such items make up the bulk of the buying program.

It is certainly impractical to try to buy an article if we do not know what it is, where it comes from, how it is processed, etc., for otherwise the value cannot be judged or estimated. Women, as compared to men, are supposed to be better shoppers because they know materials and, as naturally follows, values. There is a purchasing agent in your household and mine, besides you and me. She is inquisitive, she finds out and knows.

The first means of gaining this knowledge of what it is, is to see the thing itself. This may not be necessary on a standard screw or cotter key but would be most desirable on a stamping, a screw machine part, an intricate die casting, or a corrugated box with complicated interior packing. A walk into the plant or to the storeroom will give us the mental picture we should have of a particular item when a requisition for that item reaches our desk.

But this is not all. Do we know how many operations there are on the screw machine part? How many dies there are required for the stamping? Have we ever seen a corrugated box made, or a die casting, or any other item important to our manufacture? If not, why not visit some of our suppliers' plants as soon as time will permit—but don't wait too long. Have a look at the manufacturing processes of our important items. The more knowledge we can gain, the better job we can do. The more familiar we are with what it is, the more intelligently we can talk to the people in our plant and to the salesman who calls on us.

As an example of the importance

The requisition rarely tells all. Four good questions for the Purchasing Agent to ask on every purchase are:

What is it?

Where and how is it used?

Why is it used?

Is it the best thing for the purpose?

Fifteen minutes a day spent on such research will provide a wealth of information that makes for better buying.

Seven Practical Pointers on Purchasing Research

The time to start a research project is whenever it comes to your attention. Be prepared to buy better on the next requisition.

No item is too small to be important. Small savings are multiplied into large totals.

Concentrate on repetitive items that make up the bulk of the purchasing program and offer the greatest opportunity for savings.

Familiarize yourself with materials by first-hand observation in the plant or stockroom.

Know the operations of your own company, as the basis for knowledge of its requirements.

Don't assume that something is right just because it has always been used in the past.

Don't try to bluff the salesman into believing that you know it all. He is one of your most important sources of information.

of knowing what it is, we might mention prepared chemicals, which are often sold in special packages by a specializing company, but which may also be available in bulk form from a chemical manufacturer. Trade name articles are often overpriced. A knowledge of an item of this kind will indicate this fact to us. Future advances in price on certain articles may be anticipated if we are familiar with the principal raw materials which enter into them and are constantly watching the raw material markets.

Having mastered the knowledge of what it is, the next step is to know its application, where and how it is used. This is essential if it is to be discussed with a prospective new supplier, the foreman in the plant, or management. It does not pay to bluff. Bluffing will not enhance the salesman's opinion of us because he can usually tell whether or not we know, and it is safe to say that we won't get away with bluffing anyone in our own organization, at least not for long. Also, bluffing, or being evasive, is one of the world's best ways of promoting back door selling. If the salesman does not get a satisfactory answer from us—and he is entitled to it—he will seek it elsewhere. The importance of this knowledge is, therefore, very apparent. The salesman who makes an impression on us is the one who can offer a better value because he knows our products and his own as well, and fits the two together. Many of these men, however, need help from us to be able to help our companies. Our answers to their questions may enable them to offer us that article we need for less money because of more efficient processing or a better value.

A pertinent incident is reported in which a certain lot of scarce steel became available and was offered to two buyers in the same city. It was close to the specification that each of them had been using, though not identical. One of the buyers was able to take advantage of this offering immediately because he knew its exact use and his company's facilities for adapting it to their purpose. The other buyer had to contact the chief engineer at his plant to find out whether the material was usable for their operation, and by the time he got an affirmative report on this question the steel had gone to his better informed competitor. Such knowledge is so important, it is so valuable that we cannot afford to be without it. Fifteen minutes spent on one item each day, or at the least, two days a week, will give us a lot of that required knowledge in the course of one year. In these busy days, any time spent away from the desk may seem like time wasted. We should realize, however, that it will not be wasted if we are learning how or where an item is used in the plant.

If we have gained and are fully abreast of all this knowledge, there is still one further question, "Why is it used?". This poses another and more important question, "Is it the best thing for the purpose?". With all due respect to engineers, foremen and department heads, they do not always think of the best thing for the intended purpose. This is the buyer's opportunity.

Some illustrations are in order on this point also. Witness the case of a buyer who was requested to buy a large steel plate approximately 150 sq. ft. surface area, for a rubber curing press. Steel had always been used. Wisely, he suggested aluminum. His suggestion was adopted with a substantial saving on the plate itself, greater ease in handling when the plate was removed for cleaning, together with other substantial benefits. Another case of inquiry by a buyer into the use of corrugated sheet used in carload packing with the result that the sheet was removed because no one could determine what actual good the use of the sheet accomplished. On occasions, these things are like Topsy. They just grew, or else were born without proper thought. Here, again, imagination and inquiry produce results.

Together with all of this goes education. Our national and local associations are continually developing new ways to make education more available to anyone and everyone who is interested in purchasing. It is especially important that every buyer, purchasing agent, director of purchases, as well as anyone in a junior capacity in a purchasing department take part in and support by attendance and participation the various phases of this educational program. Here again we are being inquisitive, inquiring for the latest information on important subjects and seeking in group meetings the benefit of the experience of others.

It is natural and easy to follow the line of least resistance, to do things as we have always done them because change means work and inconvenience. But this sort of action or lack of it will not enhance our profession or make us more useful to our organizations, nor will it help to improve our national economy. Possibilities in purchasing today stagger the imagination. They are waiting like ripe plums to be plucked from a tree. But the enjoyment of the fruit is not possible unless we reach, unless we are inquisitive. Without question, it will pay.

THE SILVER TRIANGLE

● *By E. L. Cady*

Silver brazing of small parts can be set up as a mass operation

ONE day last summer, the business pages of the newspapers printed an item about the Mexican government buying 200,000 fine ounces of silver in an effort to bolster the price in the U. S. market. Silver had been selling at 60 cents a fine ounce. The bullish action had no immediate effect; within three weeks or so after it was taken the market had slid down to 58 cents. But this was just one more of the actions of the International Politics villain who is constantly turning the honest marriage of the silver producers to the industrial users into an old fashioned melodramatic "eternal triangle". Since then, the price has advanced to well above 70 cents.

The importance of this is that if left alone silver might easily become "the most versatile metal." It could not become the most universally useful metal; it never would be produced in sufficient quantities to displace iron or copper for that title. But it would be difficult to think of any other metal which is performing as many extremely difficult tasks as silver in corrosion resistance, electrical conductance, magnets, thermal conductance, chemicals resistance, metallurgy, metal parts assembling (silver brazing), catalysts, photographic films, medicine, as a chemical ingredient, and for ornamental beauty.

If that general list of uses were broken down into specific ones, a thick catalog would be created. From a domestic electric iron to the largest of steel mill rolling equipments, for example, it would be difficult to find a device in which electricity plays any part and in which silver does not play at least a dozen important parts. And the industrial uses of silver would almost be beyond numbering if there was not so much fear of the price structure in the silver market.

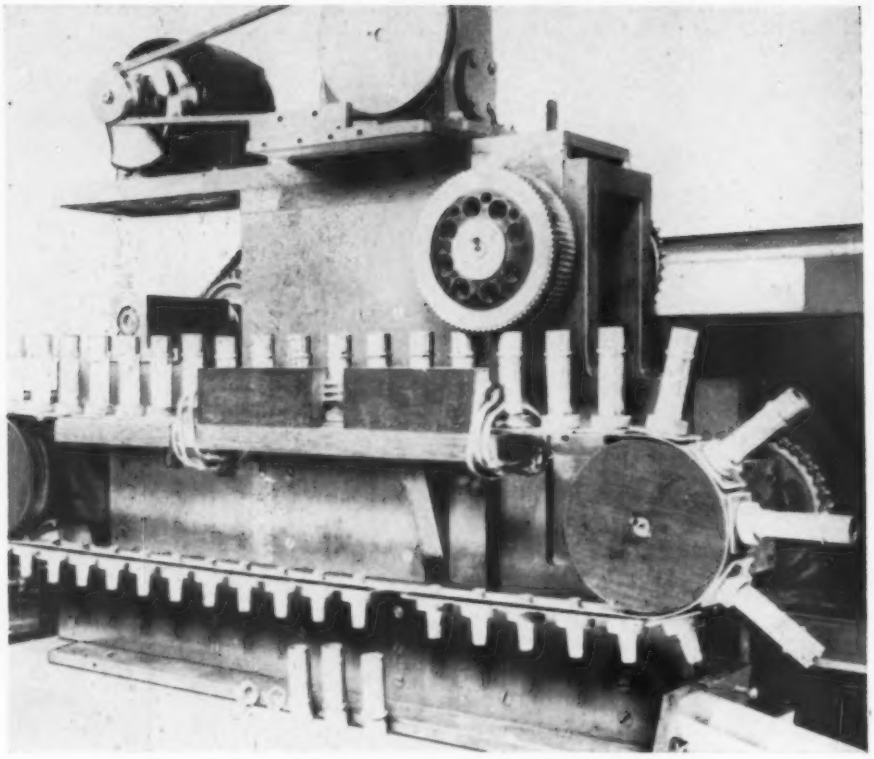
Fear of that price structure is of two kinds: (1) psychological, and (2) justifiable.

The psychological fear ought to be dismissed. It is based upon a general mental impression that, pricewise, silver is a younger brother of gold and that both are "jewelry metals".

Actually, silver is quoted in dimes per fine ounce where gold is quoted in dollars. Moreover, gold is much higher in specific gravity, which means that a pound of gold is much smaller in dimensions than a pound of silver. One of the largest fine metals houses estimates that, amount for amount to accomplish the same purposes, gold averages more than 100 times the price of silver. Pricewise, the two metals are not comparable.

The fact that silver is quoted in troy ounces misleads many an industrial metals buyer into thinking of it as a jewelry metal. There are 14.583, or about 15 troy ounces in an advordupois pound. Multiply 74 cents a fine ounce (approximate price at this writing) by 15, and the price of silver is about $11.00 a pound. There are plenty of indus-

Industrial applications of silver brazing



Mass Production—steel tips brazed to bronze bodies of engine valve guards.

trial alloys which sell for higher prices than that. Many extreme duty alloys are sufficiently more difficult to fabricate so that they result in higher costs for end products than does silver. Silver easily qualifies pricewise as an industrial rather than a "jewelry" class metal.

The justifiable fear of the silver market structure is all political. Between 1910 and 1948, silver prices have jumped up and down in a crazy fashion, the lowest price being about 25 cents a fine ounce ($3.75 a pound) in 1933 and the highest—aside from black markets—$1.37 ($20.55 a pound) in 1919. These high and low years might seem to be in line with general economic factors, but the price rocketed up to its top when heavy buying for foreign coinage was followed by heavy Chinese buying after government restrictions ceased; two years later this 1.37 price had been caused to plummet down below 55 cents by the general debasement of foreign coinage. The bottom of less than 25 cents was hit when foreign governments slowly unloaded demonetized coin and silver reserves and took other political actions. In 1935 alone, due to U. S. government action, the price whooped up from 55 cents to over 80 cents, and flopped back to 45 cents.

During the war there were price controls. Right now the market shows a weird pattern of export controls, internal controls, entirely different markets in the U. S., in England, and in India, huge chunks of silver arriving in India without anybody knowing where they came from, a tremendous quantity out on lend-lease to be returned (we hope) ounce for ounce within five years of the date on which the war is officially declared to be at an end.

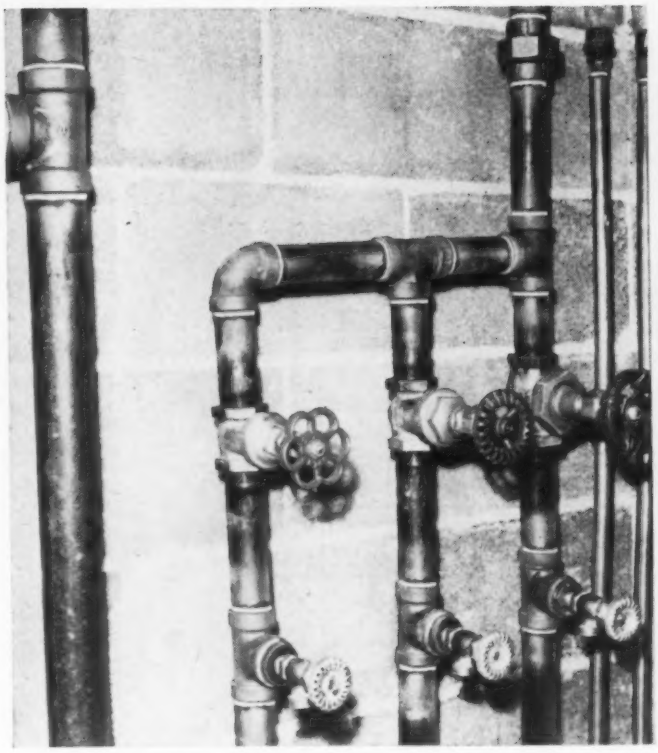
Anybody who wants a historical and lucid exposition of this hodge podge will find it in Handy & Harman's booklet "31st Annual Review of the Silver Market". But in so far as the immediately predictable effects of politics on silver prices are concerned, nobody seems to know the score.

In the face of all this, producers and fabricators and users of silver products see several hopeful signs.

First of all, the silver market has shown an ability to break well below the 80 cent price which was the predicted effect of government buying during 1947. Even during the heavy demand for all metals which characterizes this period, there seems to be enough silver available so that industrial supply and demand is governing, at least in part, the industrial price.

Second, silver in a great many of its uses is a highly indestructible, highly recoverable metal. In coins, table ware, magnets, catalysts, the linings of chemical equipment, many electrical products, there is metal which is immediately returnable to markets. Silver is recoverable in large quantities from chemicals in which it is used; the film makers and motion picture companies strip their used film to recover the silver. From all of these sources a somewhat steadying supply overhangs any rising market. And this supply is enhanced by more effective recovery methods. Electropolishing (the reverse of electroplating), for example, recovers an extremely fine and immediate re-useable silver as contrasted to the smelting and refining operations which ordinarily must be performed on metal recovered from friction polishing methods.

Augmenting this is the habit of putting silver "in the consuming market bank". At any given price range for silver, in many products there is an economic balance between the amount of silver and of other metals which it is profitable to use. The lower the market, the higher the proportion of silver. The balance is struck somewhat because the public will buy more readily a consumer item which either has a heavier plate or else is solid silver, but very largely because silver is so highly workable that with any serious lowering of market price the savings on fabricating costs of various items may overbalance the costs of putting more silver into them. Thus, when prices are low, more silver tends to move onto the consuming market for the same physical volume of silver goods, and



Installation—threadless fittings in a radiant heat manifold piping system.

Maintenance—broken slitting saw repaired for further service.

when the market goes up some of this metal tends to return as scrap while less silver is shipped in products.

The effects of the recoverability of silver tend to hold the market down, those of the "consumer bank" tend to hold the market up; the combined effects provide the market with a balance wheel. Added to this, there are dozens of uses for silver into which the metal will move if its price becomes sufficiently low. Linings for food cans, chemical ingredients for insecticides and fungicides, alloying ingredients for stainless steels and for other alloys, silver iodide to be blown into the air for rain making purposes, bonding agents for clad metals, are a few of them. In all of these, silver has high superiorities providing that its price is low enough and that users are certain that they can get the necessary supplies. From none of them does much, if any, silver return to the market. These uses, then, work against any prolonged severe depression of the silver price.

The balancing elements in the silver market seem to be greater than any action which politics can take to upset them, short of complete nationalization of the metal or absolute pegging of the price by law. The industrial purchaser of silver-bearing products can move with at least some confidence in market stability.

Behind this confidence also can be the highly intelligent position taken by the twelve or so major producers of industrial silver items. These houses have set themselves up to do a great deal of alloying, fabricating, and semi-fabricating. They can produce complete products, wrought raw materials items such as tubes and wires and strips and shapes, partially finished products. They can apply silver to parts which have been fabricated on screw machines or punch presses or other equipment by the purchaser. They have highly organized sales and application engineering staffs. Altogether, they are in excellent position to "temper" any fluctuations of the silver market to the economics of the purchaser.

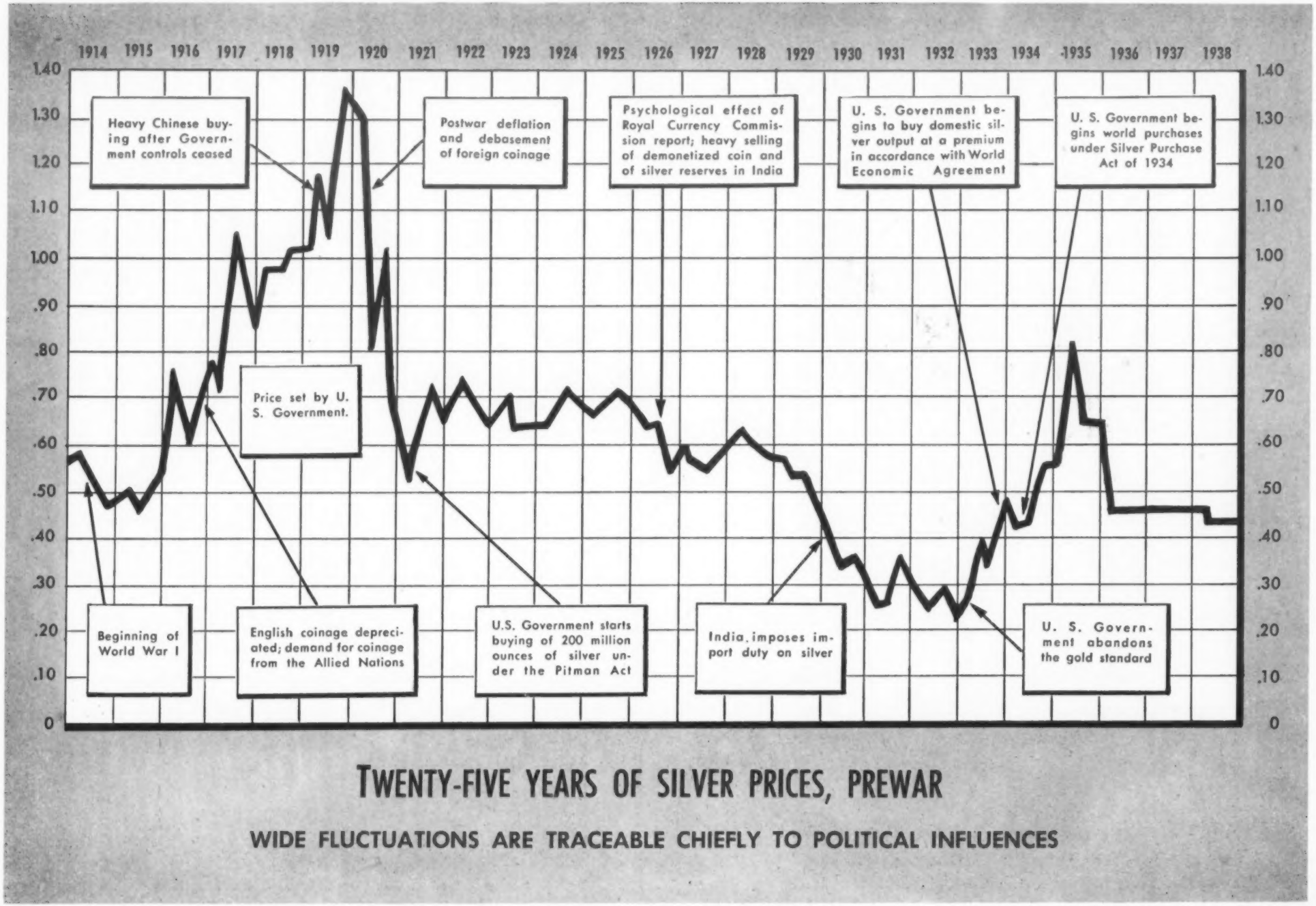
In view of the silver market set up there are techniques which ordinarily are followed in the buying of silver-bearing products.

Silver Braze Alloys. Although one of the principal makers of these regularly lists twenty-four different alloys, just one of these will handle at least 90% of all applications and another is suitable for nearly all other uses. The largest selling alloy is useful for nearly all product assembly jointing operations, and the other for fastening carbide tool tips to their shanks and other supports and for other operations in which long plastic temperature ranges coupled with high filleting abilities are advisable. The remaining twenty-two standard alloys of this maker, plus several special alloys not regularly listed, are for problems peculiar to individual situations and are mostly sold to very large users.

Special alloys may be needed for increased resistance to acids and other chemicals, for prolonged stability when overheated during the silver brazing operations, for special color or color matching if the braze alloy is visible in the finished product, for adaptation to automatic induction heating and other high speed methods. But for the most part, only one or two alloys need be carried in inventory, and these may be found widely distributed in mill supply house stocks.

Silver brazing for repair work usually employs alloy in wire form. The art is widely understood and handled by welderies, welding departments and some maintenance men, but is not as widely used for equipment maintenance and for salvage of spoiled production work as it could be with great profit.

Silver brazing for production commonly involves redesign of the product to make fullest use of braz-


1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938
1.40
1.30
1.20
1.10
1.00
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.80
.70
.60
.50
.40
.30
.20
.10
0
Heavy Chinese buying after Government controls ceased
Postwar deflation and debasement of foreign coinage
Psychological effect of Royal Currency Commission report; heavy selling of demonetized coin and of silver reserves in India
U. S. Government begins to buy domestic silver output at a premium in accordance with World Economic Agreement
U. S. Government begins world purchases under Silver Purchase Act of 1934
Price set by U. S. Government.
Beginning of World War I
English coinage depreciated; demand for coinage from the Allied Nations
U.S. Government starts buying of 200 million ounces of silver under the Pitman Act
India imposes import duty on silver
U. S. Government abandons the gold standard

TWENTY-FIVE YEARS OF SILVER PRICES, PREWAR

WIDE FLUCTUATIONS ARE TRACEABLE CHIEFLY TO POLITICAL INFLUENCES

ing economies. The braze alloy may be purchased in wire or other shapes, or rings and other prefabricated forms may be more economical. Standard price lists for the costs of fabricating these rings are obtainable from at least one alloy maker, the prices being added to the costs of the alloy itself. If the purchasing company plans to fabricate its own rings or other forms, dead soft stock should be ordered. This is because the braze alloy tends to work-harden in the bending and other operations and the dead soft stock will give less of such trouble.

The dead soft stock costs no more. But where mechanical fabricating operations are not to be performed on the wire, a harder or standard temper is preferred since the dead soft stock may bend out of shape easily enough to bother the operators.

Prices of silver braze alloys tend to move in sympathy with each change of five cents or more in the silver market, the change in the actual alloy price per pound changing only in accordance with the amount of silver in it. The changes are not highly sensitive. The net percentage of change is low because the amount of cost represented by alloying the metals and making the wire and forming the rings, plus the sales engineering and other overhead costs, are fixed charges and do not change with the silver market.

Scrap and salvage methods should be carefully governed. If the scrap contains many "ends" of wire too short for the operator to hold close to the brazing area, these may be brazed to new wire and so used as direct salvage. Droppings and other recoverable scrap which has been heated should not be remelted for re-use unless the shop is especially equipped to do so. Such scrap is directly saleable to the alloy makers for a reasonable value of the silver as modified by the costs to recover and refine the metal. The scrap values are high.

Electrical Contacts and Parts. The war greatly increased the facilities and improved the techniques of the silver products companies for the fabricating of special shapes and the applying of silver to other metals. It was believed at the time that these were "war emergency" measures, that return to prewar products and methods would be quick when large supplies of silver became available. But many of the silver-clad steel and copper and other common metal shapes proved to gain so greatly from the stiffness and wear resistance and other physical properties of the common metals that they will continue to be made. And many of the new economies from improved techniques in the making of silver lined or clad tubes and other shapes are changing the costs pictures on items made of these products.

The small and ordinary user of electrical parts will buy them from specialized makers of such parts. But it is in this field, perhaps more than in any other, that the advantages of making screw machine products and other parts and then having silver claddings or platings applied to them are found.

Here, too, major market swings of silver make differences in the advantages of using solid silver vs. silver cladding on common metals.

Silver brings to electrical parts the highest electrical and thermal conductivity, low corrodability, with many of the products of corrosion themselves excellent conductors. Slip rings on airplane electrical motors which fly across oceans are made of silver alloys for corrosion resistance. Silver in brushes can lay silver deposits on commutators and other moving contacts, thus decreasing voltage drop and increasing service life. Silver-bearing brushes mounted in the motors of a radio station lasted four years, and when taken down for inspection were still in good operating condition. Capacity for capacity, silver wire for electrical conductance can be lower in cost than any other metal excepting copper; this experience was reported even under wartime prices.

The designs and applications of electrical parts usually are in the hands of engineers. But where substantial quantities are being used, a purchase engineering operation may be indicated to make sure that advantage is being taken of the latest techniques of the silver products houses.

Silver Magnets. Alloys containing over 85% of silver are made into permanent magnets which have extremely high coercive powers. The advantage of this is that a shorter magnet may be used for the same air gap, with consequent savings in the dimensions and weights of assemblies. The silver alloys also are easier to machine and fabricate than some of the other permanent magnet ones.

Magnets ordinarily are purchased from magnet makers. But since the price of silver has a great influence on the cost of an alloy which contains such a high percentage of it, a purchase engineering investigation of magnets may be in order at the present silver market.

Silver Shapes. Silver tubes may be of cylindrical or of various other cross sections, and may be solid silver or of almost any metal clad with silver on the inside or the outside or both. Silver strip and sheet may be solid silver or clad all over or clad on any selected area, and may be purchased rolled to almost any desirable contour.

The method of applying the silver can be important.

Electroplating, in general, produces a porous structure which is more pregnable to corrosive agents and lacks many of the physical properties of the wrought claddings. But electroplating improved greatly during the war. Electropolishing, which can smoothen plated silver to such a high polish that the surface has to be mechanically roughened before the plate can be sold as table ware, is just coming over the industrial horizon and is certain to improve the applicabilities of electroplated silver products. Reversible plating, in which, in the same bath, the silver is alternately plated onto the base metal and then a little is electropolished off from it so that each succeeding application of plating finds a smooth surface and does not build up roughly or porously, is another technique which lately has passed its experimental stages. With the well known high ability of plated silver to be self healing under abrasive or corrosive attack the results of the newest electroplating techniques as applied by the most advanced silver products houses must be watched with care.

Silver cladding takes full advantage of the fact that silver is one of the most weldable as well as workable metals. Silver sometimes is plated on the base metal, then turned into a wrought-clad surface by rolling. The thicknesses of silver practical to apply as clads have been reduced, and since this reduces the proportionate amounts of silver per finished item it also reduces the net effects of changes in silver prices.

As this is being written the silver market is in suspense, with the price slipping downward. Many traders expect it to go up, and nobody knows where it will settle. But for the industrial buyer of silver-bearing items the significant facts are that silver shows signs of establishing its own prices in spite of politics, and that technology has made many silver-bearing items largely independent of silver prices.

PURCHASING PROCEDURE AT THE Thew Shovel Company

Lorain, Ohio

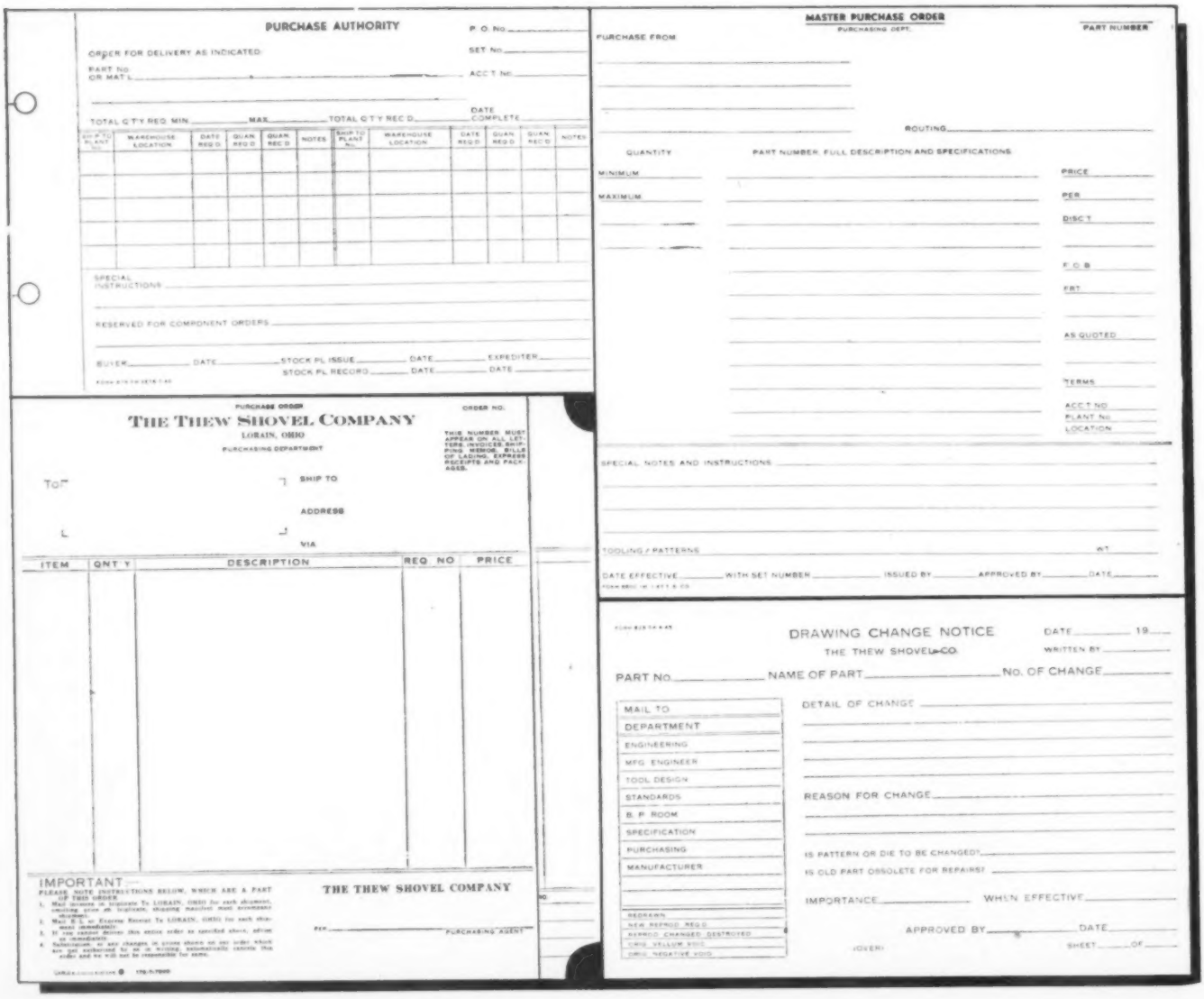
● ***A. C. Lundgren,*** **Director of Purchases**

ORGANIZATION for purchasing at the Thew Shovel Company is unique in that there are two divisions in the purchasing department—one for the procurement of materials required in the manufacture of the Model TL-20 machine, which is the company's high production unit, and the other for the procurement of materials required for the remainder of the line. The functions of the two divisions are substantially parallel except for subcontracting activities, which are a considerable factor in TL-20 procurement. Needless to say, the two divisions are closely coordinated through the office of the Director of Purchases.

Purchases of production materials are initiated by means of a Purchase Authority issued by the Planning Department. Requisitions for maintenance and supply items originate in the Stores Depot.

The Master Purchase Order, from which orders are typed, is a record and working form, filed by part number, and containing full information regarding each part. It is made out in three copies, for Purchasing, Cost, and Planning. The Purchasing Department copy is on card stock for frequent reference and handling.

The Purchase Order is made out in seven copies: original and acknowledgement copy for the vendor; Purchasing Department record copy on ledger stock, with space to show follow-up action, and ruled on the back for a record of receipts and invoices; and copies for Purchasing Department alphabetical file, Receiving Department, Expediting, and Production Control. The column showing price information is blocked out on the last three of these copies.



WORK PROCEDURES AND FLOW CHARTS

FUNCTIONAL duties for all positions in the department have been systematically detailed, allocating responsibility for the various operations and assuring a smooth flow of work. The following examples are typical:

ASSISTANT PURCHASING AGENT — T. L. DIVISION

SUMMARY: Material procurement at the request of the Planning Department on the basis of satisfactory price and delivery shall be the responsibility of the Assistant Purchasing Agent in charge of procurement for the Model TL Division. He shall be directly responsible to the Director of Purchases and work in conjunction with the Co-ordinator of the TL Division.

Procedure

1. Supervise departmental personnel through the Buyer, Buyer's Assistant and Procurement Manager.
   - A. Work procedures as required.
   - B. Assignment of responsibilities.
   - C. Delegation of authority.
2. Source Selection.
   - A. Facilities of supplier.
   - B. Price.
   - C. Delivery.
3. Maintain and issue lead time requirements.
   - A. Weekly adjustment to lead time.
4. Member of Operating Committee of TL Division.
   - A. Develop obstacle report for Co-ordinator.
   - B. Attend all meetings of the committee.

Work Flow Chart

ITEM	FREQUENCY	FROM	TO
Purch. Auth. (Prod.)	Daily	A.P.A.	Order Writer
P.D. requisitions	As Rec'd.	Pattern Comm.	Order Writer
Purch. Order (Prod.)	Daily	Order Writer	Mail
P.O. copy (Prod.)	"	Order Writer	File
Inquiries	"	Order Writer	Mail
Inquiry copy	"	Order Writer	A.P.A.
Quotations	As Rec'd.	Suppliers	Recap
Quotation Recaps	Daily	Order Writer	A.P.A.
Engineering Changes	As Rec'd.	Spec. Dept.	Supplier
Min. Quan. Requests	Daily	Typist	Plan. & Cost
Master Purch. Orders	"	Order Writer	A.P.A. Plan. & Cost.
Expediting Information	"	Suppliers	Expediting
Quotation Summary	"	Buyer	A.P.A.

BUYER — T. L. DIVISION

SUMMARY: Order placement and subcontracting for production material in the T. L. Division at the direction of the Assistant Purchasing Agent.

Procedure

1. Issue Inquiries.
2. Review quotations.
3. Establish minimum order quantities in conjunction with Planning and Cost Departments.
4. Issue and maintain Master Purchase Orders for production.
5. Subcontracting.
   - A. Interview supplier's representatives.
   - B. Inspect supplier's facilities.
   - C. Determine reliability of supplier.
   - D. Review methods of manufacture.
6. Special Expediting.
   - A. Tooling and material to subcontractors.
7. General Buying.

Work Flow Chart

ITEM	FREQUENCY	FROM	TO
Purch. Author. (Prod.)	Daily	Planning	Buyer
Purch. Author. (Replace.)	"	Planning	Buyer's Asst.
Requisitions (Repairs)	"	Depot	Buyer's Asst.
Inquiries	"	Buyer	Typist
Quotation Recaps	"	Buyer	Buyer
M.P.O.'s (Prod.)	"	Buyer	File
M.P.O.'s (Depot)	"	Buyer's Asst.	File
Order copies	"	File Clerk	Dir. of Pur.
Back charges	"	Cost Dept.	Buyer's Asst.
Inspection Reports	"	Inspection	Buyer's Asst.
Cancellations	"	Planning	Buyer's Asst.
Rescheduling	As req'd.	Planning	Chief Clerk
Prod. Control Report	Daily	Expediting	Prod. Control
Obstacle Report	"	.....	All Depts.
Quotation Summary	"	Buyer	Dir. of Pur.

BUYER'S ASSISTANT — T. L. DIVISION

SUMMARY: Order placement for replacement material, Plant 4 maintenance and Depot Requirements at the direction of the Assistant Purchasing Agent. Supervision of clerical detail in the department.

Procedure

1. Clerical supervision.
   - A. Chief Clerk.
   - B. Order Writer.
2. In-bound mail.
   - A. Acknowledgements.
   - B. Invoices.
   - C. General correspondence.
3. Issue Inquiries
4. Review quotations.
5. Establish minimum order quantities in conjunction with Depot.
6. Issue and maintain Master Purchase Orders for Depot.
7. Defective Reports and replacement service orders.
   - A. Shipping memos.
   - B. Quality reports to vendor.
   - C. Back charges to vendor on salvage.
8. Inspection reports on quality.
9. Discrepancy reports.
10. Cancellations and order changes.
11. Rescheduling.
12. Statistical reports.
13. Service requests for supplier's engineers.
14. General buying.

Work Flow Chart

ITEM	FREQUENCY	FROM	TO
Replacement P.A.'s	Daily	A.P.A.	Order Writer
Defective Reports	"	Order Writer	Inspection
Shipping Author.	"	Order Writer	Mail
Quality Reports	"	Order Writer	Mail
Qual. Report Copies	"	Order Writer	P.A. A.P.A. Expediting
Depot Requisitions	"	Depot	Order Writer
Purchase orders	"	Order Writer	Mail
Purch. Order copies	"	Order Writer	File
Acknowledgments	"	Suppliers	Chief Clerk
General mail	"	Suppliers	As req'd.
Correspondence	"	Stenog.	Mail
Inspection Reports	"	Inspection	Stenog.
Salvage Costs	"	Cost Dept.	Vendor
Discrepancies	"	Chief Clerk	Vendor
Discrepancy copies		Stenog.	Expediting Traffic Receiving
P.A. cancellations	"	Planning	Vendors
Order changes	"	Planning	Vendors
Rescheduling	"	Planning	Vendors
Reschedule copies	As rec'd.	Stenog.	Expediting Prod. Control Planning
Vendor Reject. Analysis	Daily	Qual. Reports	A.P.A. monthly
Casting Cost Analysis	Monthly	Tabulating	A.P.A. annually
Service Requests	As req'd.	Inspection	Vendor

PROCUREMENT MANAGER — T. L. DIVISION

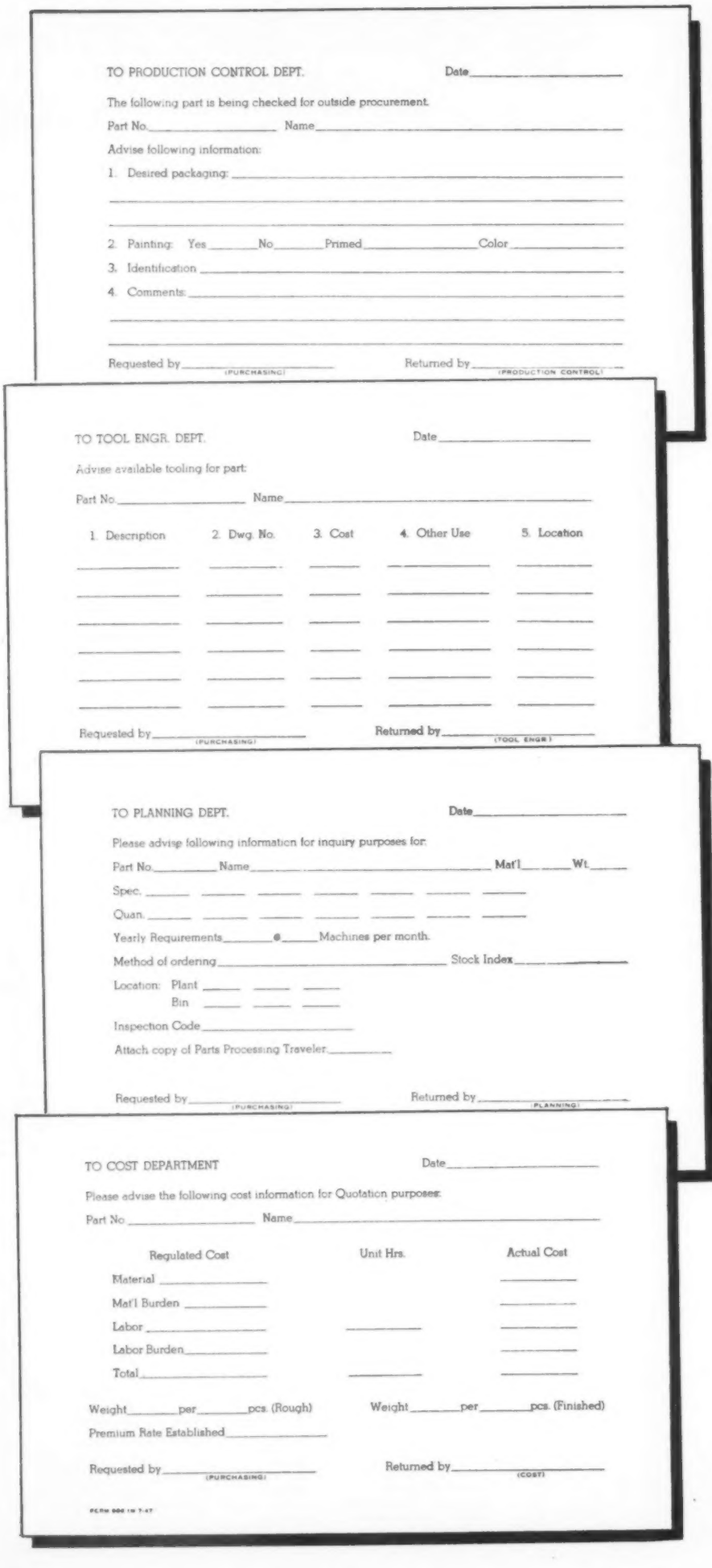
SUMMARY: All functions necessary to effect delivery of all orders in accordance with established schedule. Informing Production Control Department of all anticipated delays. Assist Assistant Purchasing Agent in maintaining accurate material lead time requirements.

Procedure

1. Supervision.
   - A. Expeditors.
   - B. Chief Clerk.
   - C. Typist and Clerk.
2. Expediting Planning.
   - A. Source assignments to expeditors.
   - B. Scheduling on suppliers.
3. General Follow-up.
4. Control Board.
   - A. Review.
5. Production Control Report.
6. Special shortages and Depot requirements.
7. Continuous check on material lead time requirements by suppliers.

Work Flow Chart

ITEM	FREQUENCY	FROM	TO
P.O. Expedit. copies	Daily	Dir. of Pur.	Expeditor
Scheduled Items	As req'd.	Planning	Vendor
Quality Reports	Daily	Buyer's Asst.	Expeditors
Shipping Information	"	Vendor	Record Clerk
Prod. Control report	"	Expeditor	A.P.A.
Expeditor Report	"	Expeditors	A.P.A.
Receipt Reports	8:00 A.M.	Rec. Dept.	Control Board



TO PRODUCTION CONTROL DEPT. Date

The following part is being checked for outside procurement.

Part No. Name

Advise following information:

1. Desired packaging:
2. Painting: Yes No Primed Color
3. Identification
4. Comments:

Requested by (PURCHASING) Returned by (PRODUCTION CONTROL)

TO TOOL ENGR. DEPT. Date

Advise available tooling for part:

Part No. Name

1. Description	2. Dwg. No.	3. Cost	4. Other Use	5. Location

Requested by (PURCHASING) Returned by (TOOL ENGR.)

TO PLANNING DEPT. Date

Please advise following information for inquiry purposes for:

Part No. Name Mat'l Wt.

Spec.

Quan.

Yearly Requirements @ Machines per month.

Method of ordering Stock Index

Location: Plant
Bin

Inspection Code

Attach copy of Parts Processing Traveler.

Requested by (PURCHASING) Returned by (PLANNING)

TO COST DEPARTMENT Date

Please advise the following cost information for Quotation purposes:

Part No. Name

Regulated Cost	Unit Hrs.	Actual Cost
Material		
Mat'l Burden		
Labor		
Labor Burden		
Total		

Weight per pcs. (Rough) Weight per pcs. (Finished)

Premium Rate Established

Requested by (PURCHASING) Returned by (COST)

PC-TM 606 (R) 7-47

SUBCONTRACTING, and the decision whether parts shall be manufactured or procured by purchase, are major considerations in connection with the TL Purchasing Division. Such decisions are based on factual data and detailed analysis, as indicated by the forms on this and the opposite page.

A series of four forms has been prepared through which the Purchasing Department requests and procures pertinent information from the Production Control, Tool Engineering, Planning, and Cost Departments, covering ordering requirements, available tooling, rates of use, total annual requirements, and a breakdown of costs, including the burden assigned to material and labor items.

In requesting a quotation from vendors, a detailed form is provided on the reverse side of the sheet, breaking down the quotation into pattern or die costs of other tooling; estimated weight of the part, rough or finished; and unit prices for various quantities. The headings correspond to those shown at the left of the tabulation sheet, on which quotations from eight bidders can be listed in parallel columns for purposes of easy comparison.

When a decision of "Make or buy?" is involved, the analysis of proposals is made on a detailed Quotation Summary sheet. Data used in this analysis will be seen to correspond with the information gathered on the inquiry forms from company departments and noted in the tabulation of bids, and including consideration of the disposition of present tooling and of material on hand or on order.

The reverse side of this sheet is used to record the decision, which may be (1) Rejection of the vendor's proposal, and continuation of the manufacture of the part by the company itself; (2) Revision of the basis of inquiry, and re-issue of requests to bid on the revised basis, possibly contacting additional vendors; (3) Acceptance of the vendor's proposal.

In case of approval, scheduling and ordering arrangements are promptly set in motion by notifying Specification, Planning, Production Control, and Cost Departments. The approval is signed by the Coordinator and the Director of Purchases, and is supported by an analysis of estimated cost saving, and the saving of machine hours in the shop load.

Part No. and/or Commodity:

Previous Cost Date

Quotation Requested by:

Inquiries Dated:

Date Quoted							
File Ref.							
Pattern or Die Cost							
Other Tool Cost							
Est. Weight Per Rough							
Est. Weight Per Fin.							
Unit Price - Lots of							
Unit Price - Lots of							
Unit Price - Lots of							
Unit Price - Lots of							
Start Delivery							
Shipping Point							
F.O.B. or Delivered							
Carrier - Truck - Frt. - C.L. - L.C.L.							
Terms & Discounts							

Remarks

REQUEST FOR QUOTATION

FROM

THE THEW SHOVEL COMPANY

LORAIN, OHIO

Date

To

Gentlemen:

Please quote promptly on the item or material described below, using the reverse side of this form for your reply. An extra copy is enclosed for your files.

Kindly supply all information indicated which applies to the particular item or material in question.

Thew Part No. D. P. No. enclosed.

Name or Description

Material or Specification

Quantities per order

Shipments to be made at rate of

Destination

Remarks

THE THEW SHOVEL COMPANY

By

Director of Purchases

(over)

THE forms shown on this page are used in securing and analyzing quotations with a view toward subcontracting the manufacture of certain parts, as described on the opposite page. The two forms illustrated below constitute the face and reverse of a single sheet which contains the complete record of the analysis and decision.

QUOTATION SUMMARY

Date

Part No. Name

Material Weight Stock Index

Spec. No.

Quan.

Yearly Requirements @ Machines per month

Method of ordering

Location: Plant

Bin

Inspection Code

Cost	Regulated	Unit Hrs.	Actual	Supplies
Material				
Burden				
Labor				
Burden				
Total				

Quotations:

	Vendor	Location	Quan./Price	Quan./Price	Quan./Price	Lead Time	Tooling
1.			/	/	/		
2.			/	/	/		
3.			/	/	/		

Special Instruction

1. Vendor	Packaging	Painting	Identification	Special

Remarks

Raw Material Disposition:

1. On Hand for sets Disposal
2. On Order for sets Disposal

Tooling Record:

1. Description 2. Dwg. No. 3. Cost
4. Other use 5. Location
6. Disposition

DISPOSITION

☐ Proposal Rejected. Continue to manufacture here.

☐ Proposal Rejected. Re-issue inquiries on following revised basis:

Suggested additional vendors:

☐ Proposal Accepted.

1. Change Specifications
2. Establish Minimum Quantity of to order
3. Planning to issue Purchase Authorities
4. Specification Dept. to issue Tool Reqn. if necessary
5. Planning to dispose of material on hand and on order

Approval - Name Date

1. Coordinator
2. Purchasing

Notification to Specification, Planning, Prod. Control, and Cost Dept. on

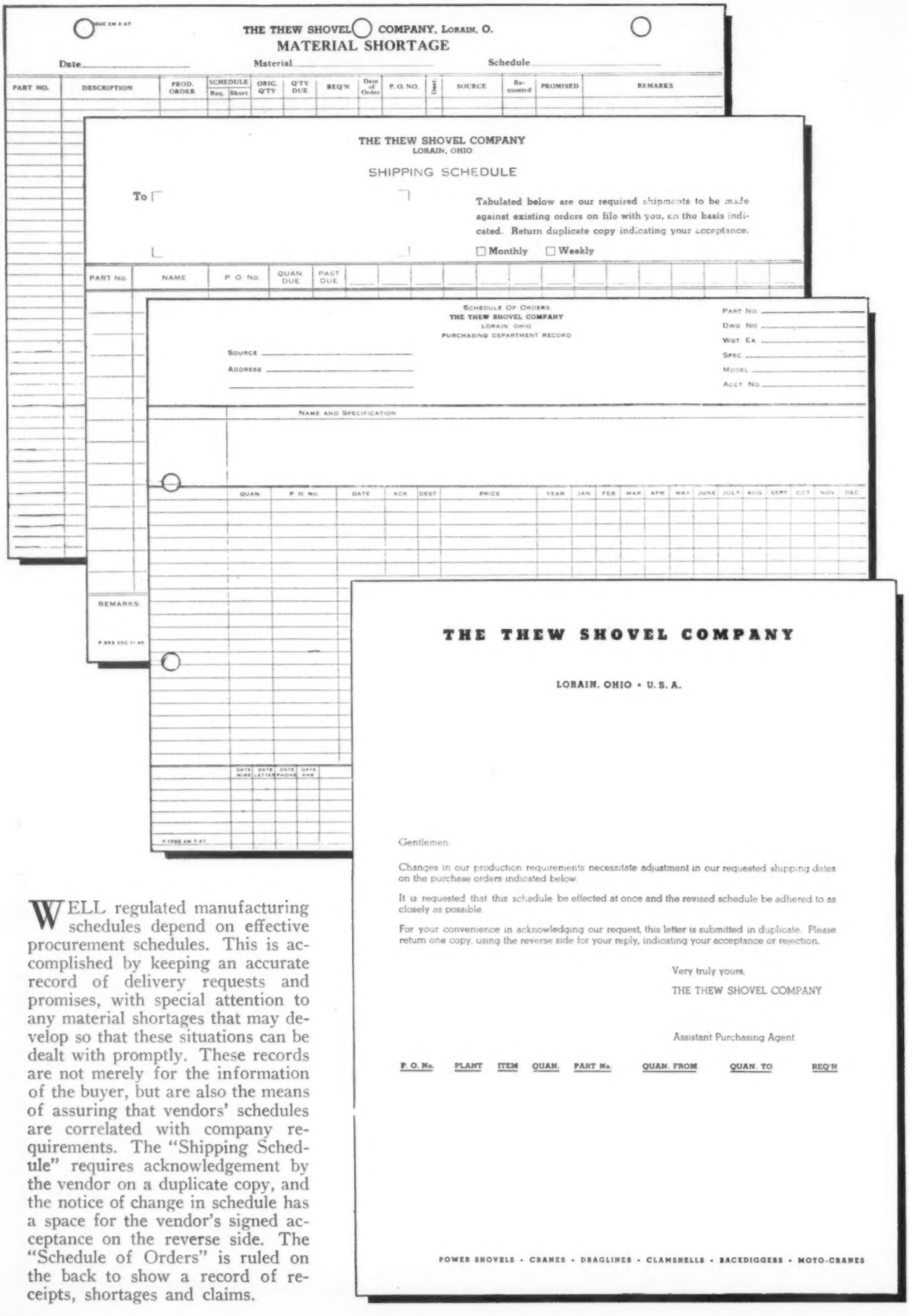
Analysis:

1. Cost Saving
   a. per pc
   b. per machine
   c. per year @ machines per month.
2. Shop Load
   a. machine hours per pc.
   b. machine hours per machine
   c. machine hours per month @ machines per month.

Issued by

Date

Returned



THE THEW SHOVEL COMPANY, LORAIN, O.

MATERIAL SHORTAGE

Date _____ Material _____ Schedule _____

PART NO.	DESCRIPTION	PROD. ORDER	SCHEDULE Req.	SCHEDULE Short	ORIG. Q'TY	Q'TY DUE	REQ'N	Date of Order	P. O. NO.	Dept.	SOURCE	Requested	PROMISED	REMARKS

THE THEW SHOVEL COMPANY
LORAIN, OHIO

SHIPPING SCHEDULE

To

Tabulated below are our required shipments to be made against existing orders on file with you, on the basis indicated. Return duplicate copy indicating your acceptance.

☐ Monthly ☐ Weekly

PART NO.	NAME	P. O. NO.	QUAN. DUE	PAST DUE																

REMARKS

SCHEDULE OF ORDERS
THE THEW SHOVEL COMPANY
LORAIN, OHIO
PURCHASING DEPARTMENT RECORD

Source _____
Address _____

Part No. _____
Dwg. No. _____
Wgt. Ea. _____
Spec. _____
Model _____
Acct. No. _____

NAME AND SPECIFICATION

QUAN.	P. O. No.	DATE	ACK.	DEST.	PRICE	YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

DATE WIRE	DATE LETTER	DATE PHONE	DATE AND

THE THEW SHOVEL COMPANY

LORAIN, OHIO • U. S. A.

Gentlemen:

Changes in our production requirements necessitate adjustment in our requested shipping dates on the purchase orders indicated below.

It is requested that this schedule be effected at once and the revised schedule be adhered to as closely as possible.

For your convenience in acknowledging our request, this letter is submitted in duplicate. Please return one copy, using the reverse side for your reply, indicating your acceptance or rejection.

Very truly yours,
THE THEW SHOVEL COMPANY

Assistant Purchasing Agent

P. O. No.	PLANT	ITEM	QUAN.	PART No.	QUAN. FROM	QUAN. TO	REQ'N

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKDIGGERS • MOTO-CRANES

WELL regulated manufacturing schedules depend on effective procurement schedules. This is accomplished by keeping an accurate record of delivery requests and promises, with special attention to any material shortages that may develop so that these situations can be dealt with promptly. These records are not merely for the information of the buyer, but are also the means of assuring that vendors' schedules are correlated with company requirements. The "Shipping Schedule" requires acknowledgement by the vendor on a duplicate copy, and the notice of change in schedule has a space for the vendor's signed acceptance on the reverse side. The "Schedule of Orders" is ruled on the back to show a record of receipts, shortages and claims.

DATE_____

THE FOLLOWING ITEMS AND CONDITIONS ARE CAUSING DELAYS IN THE OPERATION OF TL PURCHASING:-

OBSTACLE REPORT
TL - Purchasing

PART NO.	NAME	ITEM	WHY	PURCHASING	EXPEDITING	PLANNING	PROD CONTROL	ENGINEERING	INSPECTION	RECEIVING DEPT	SHIPPING	TRANSPORTATION	COORDINATOR	DEPOT	COST DEPT	TRAFFIC	BLUE PRINT
			TOTAL THIS DATE														
			TOTAL TO DATE														

COPIES TO:- ACL, RWD, AWS, RHZ, NHL, EWJ, JUN, DP, WH, LGSTJ, RPK, TMD, RNB.

ONE of the most interesting procedures in this purchasing department is the preparation of an "Obstacle Report", issued daily (or as specific occasion may arise) to call the attention of other departments to trouble spots that are causing delays or otherwise hampering the operation of the purchasing schedule. The report originates with the Assistant Purchasing Agent in charge of procurement for the TL Division, and is distributed to all departments. It has proved a valuable and effective means of enabling the management to overcome the many factors that might interfere with maintaining an even flow of work between departments, or might otherwise affect the overall company output.

Routine correspondence with vendors on matters of common recurrence is facilitated by the use of printed forms and mimeographed form notices like those illustrated below.

THE THEW SHOVEL CO.
Lorain, Ohio
PURCHASING DEPARTMENT

DISCREPANCY REPORT NO......

TO: _____

SUBJECT: Invoice No. _____ Date Recd. _____
Destination _____ Date Recd. _____
B/L No. _____ Delivering Carrier _____
Frt. Bill No. _____ Collect Prepaid _____ Amt. of Charges.

GENTLEMEN: . .
Please Note the Following Discrepancy in the Shipment Covered By The Above Invoice:

YOU HAVE INVOICED				
Our P. O.	Your No.	Quan.	Part No.	Name

WE RECEIVED				
Quan.	Part No.	Short	Over	Damaged

☐ Freight Bill Was Noted To Indicate the Above.
☐ Freight Bill Was Signed Clear As Shortage or Damage Was Intern
Please Investigate the Above Immediately and Clear Discr
☐ Instigate Tracer and Request Proof of Delivery.
☐ Ship Replace Material On No Charge Basis. (Be C
☐ Render Invoice for Overage Which We Will Retain.
☐ Give Disposition of Overage or Damaged Material
☐ File Claim Against Carrier.
☐ Advise Us As Soon As Possible of Your Findings.
☐ _____

To Assist You We Are Attaching the Following:
☐ FREIGHT BILL
☐ BILL OF LADING
☐ COPY OF INVOICE
☐ _____

cc: - RECEIVING
EXPEDITING
PURCHASING

Form 920 - 3M9 LP Co.

THE THEW SHOVEL COMPANY
POWER SHOVELS, CRANES, DRAGLINES AND BACKDIGGERS
LORAIN, OHIO

Gentlemen:

Kindly note the following Report on Material that is not coming perfect. The reason for complaint or rejection is herein mentioned.

Gentlemen:

Please refer to your invoice No._____dated_____,
and change the purchase order number application on the_____part,
number_____ _____ _____from order number_____to
order number_____.

This change in purchase order number application is to make certain that the purchase orders requested due on the earliest date are completed in proper sequence.

Very truly yours

THE THEW SHOVEL COMPANY

Purchasing Department

T.M. Doan:as

A. C. Reifsnider

A truck fleet of fourteen units is important to the mine operation. Reliable and economical operation of the truck fleet depends on proper purchasing.

PURCHASING ON EXPERIENCE

Service records are the most reliable guide to proper selection of supplies

● *By A. C. Reifsnider*
Phelps-Dodge Copper Queen Mine
Lowell, Arizona

IT has long been our belief that proper purchasing can only be accomplished through close cooperation between the operation headquarters, the warehouse, and the purchasing department.

Our procedure is the conventional one. Signed requisitions go in from our operation and maintenance headquarters to the warehouse. Orders which cannot be filled there go direct to the purchasing department.

The procedure which I believe not to be conventional is the closer than average cooperation between the three departments in maintaining performance records and working up case history studies on the products we buy, as a guide to better purchasing.

At the mine we operate a motor truck fleet of 14 units. These run from 1½-ton utility trucks and pickups to 5-ton dump trucks.

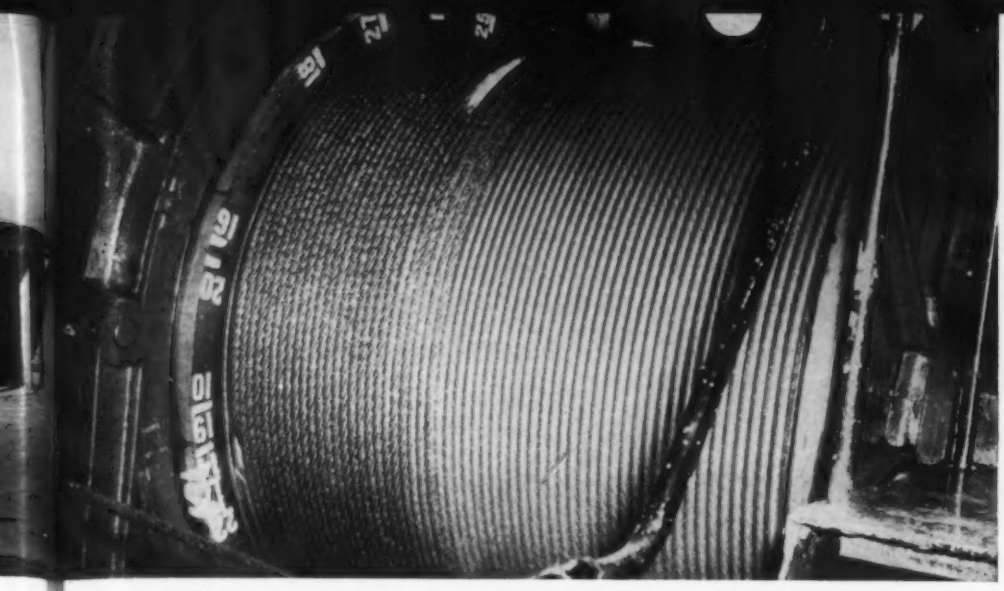
We keep a tire record for every running wheel of this fleet. This record shows the size, type, make, cost, date of purchase, and "date on" for every tire. It also shows every puncture and failure, as well as every repair, including recapping.

From this record a tire case history report is compiled and copies are furnished to the warehouse and purchasing departments. In ordering tire replacements, often a letter accompanies the requisition calling to the purchaser's attention certain facts which have been disclosed in the case history report.

The same record system follows through for the units themselves. Our truck dispatcher, H. Humphries, keeps these records. We know hourly where every truck of our fleet is located and what it is doing. We post failures and repairs and maintenance daily. A study of our fleet operation record shows exactly what we are getting from each truck. A case history report is worked up for the different trucks and copies of this report are furnished the warehouse and the purchasing departments.

Through a study of these records, we decided to switch from doing our own motor rebuilding to a policy of motor exchange which has resulted in saving us considerable time and money.

For example: Take a Ford V-8 motor which we use in all of our pickups and 1½-ton trucks—a new motor complete costs us $275, approximately. At the regular authorized dealer, the exchange charge on this motor is $134. Our records prove that we cannot afford to rebuild and run in a motor, considering the time element as well as the labor cost, for this figure. This fact was not developed from one case but by taking the average cost



This wire rope line was installed in November, 1942, and hoisted more than 1,200,000 tons in 50 months of service. Samples were cut and tested at regular intervals as part of the wire rope record.

and time on ten, twenty, and thirty complete overhauls.

This same holds true for transmissions, rear end parts, and other replacements.

And we have also found this true for the major part of our movable equipment such as draglines, shovels, carryalls, dozers, etc.

We use a tremendous amount of wire rope in our operation. We have found it pays us to operate a separate rope department with a rope foreman. We keep as complete a rope record as we do a tire record.

Here at the Copper Queen mine there are six major hoists in operation. The shafts vary from 1400 feet to 2966 feet in depth. We use 1 and 1½ inch Improved Plow Steel, 6 by 21, hemp center, preformed, for our hoist work.

The selection of this particular type and construction of rope is the result of repeated test runs and the study of one rope run against another rope.

Taken at random, a set of preformed hoist ropes, 3450 feet, 1½ inch, installed in November 1942, handled up to January 15, 1947, over 1,200,000 tons. At regular intervals, samples of these ropes have been cut and sent in to the factory for tests.

The rope record on this installation shows every pertinent fact from the date of purchase to the present minute. Copies of studies of these records are made and sent to the warehouse and purchasing departments.

Our records show that we obtain from 30% to 50% more safe life from preformed hoist ropes than from non-preformed. And further, the preformed ropes, when retired from hoist duty, give us a better and longer second life in the pit, on electric shovels, and as swing ropes.

Going on with the record, we have found that we get greater safe life from one make of rope than from another. The same is true in the pit, where we use as much rope as we use on top. As a result, this make of rope gets our preference.

In ordering reserve and replacement ropes, the requisition is frequently accompanied by a letter which calls attention to findings in the rope record, and makes recommendations as to type, and as to make, based on past experience. More than this—the heads of the different departments get together at regular meetings and go over case history records and work up additional tests and checks which will later go into the records as added aids in making future purchases.

All safety recommendations as to make and type of equipment are made in writing, and copies are delivered to the operation headquarters, the warehouse, and the purchasing department.

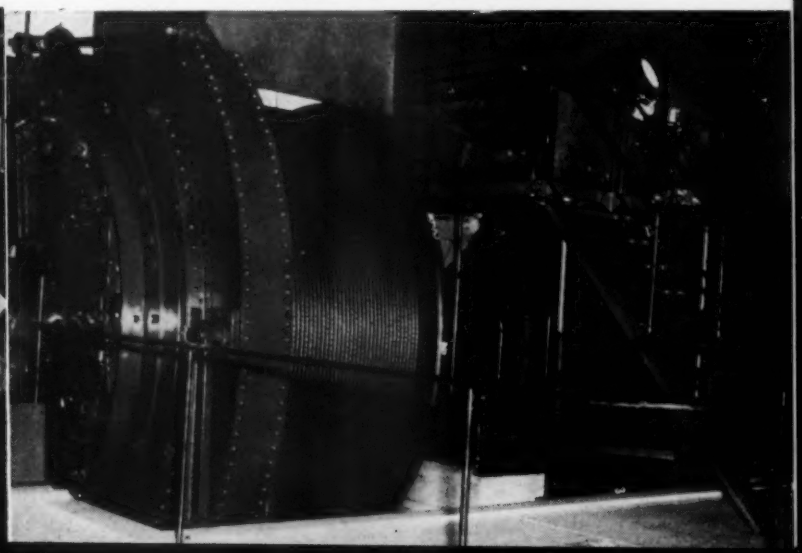
If a certain type of equipment has an added safety advantage, this is given priority. Safety operation findings are recorded and made a part of the case history records.

Such full case histories, records of rest runs, and close cooperation between operation, maintenance, warehouse and purchasing, pays big dividends. It is not always as easy as it seems to select and purchase the right equipment for every job. We are constantly finding and correcting errors which we have been making for many years.

To me, the important point is that these errors are being corrected, and through cooperation we are making fewer of them.

H. Humphries, truck dispatcher, maintains a complete case history record of every vehicle and every tire, as to service and cost. These records are available to the purchasing department.

This drum of 1½-inch preformed wire rope, which serves a 2966 foot shaft at the Copper Queen, was selected on the basis of practical experience with several types and makes and an accurate record of their performance on similar jobs.



RECEPTION ROOM BOOKLETS

Some current examples of how progressive purchasing departments establish friendly relations in receiving visiting salesmen

Reception lobby of the Meredith Publishing Company; the "Rest, traveler" plaque hangs over the desk at right.

FROM time to time we have presented in these pages some of the better examples of reception room techniques designed to express a welcome to the visiting salesman and to establish a properly cordial and friendly relationship even in advance of the interview. Some further examples are shown herewith. Obviously, no argument is needed in these days to prove that the man with a good sales story and the product to back it up is a decidedly welcome visitor; but it is a good idea to express that welcome. Similarly, it is true that the actual treatmen he receives is far more important than any pleasant words and good intentions; but the words can define the welcome and put it into concrete form. The increasing use of reception room booklets among companies all over the country is convincing evidence that this simple device has made an excellent impression on business travelers, and that it is achieving the results intended.

What are these objectives? In the unpretentious but attractive and effective booklet distributed at the offices of Geuder, Paeschke & Frey Company, Milwaukee, President A. K. Paeschke expresses it well in a brief signed paragraph:

"Our intentions in providing this booklet are four-fold: To welcome you and try to make you feel at home; to acquaint you with our personnel; to make you familiar with what we do here . . . and to help you pass the time while you were waiting. We hope we have succeeded in this and that you will call again . . . soon."

"Hello!"

The booklet itself carries a tremendous impact through sheer simplicity, starting with the cover, which bears the single word, "Hello". It consists of eight pages, 3¾ x 7¼ inches, printed throughout in green ink that gives it a bright, informal air; the spot sketches that are used for illustration create the same impression. The foreword is brief. After the conventional message of welcome, the visitor is invited:

"Make yourself at home . . . Our reception room is not too spacious or luxurious, but we will do our best to make you comfortable . . . If the person you wish to see does not receive you in a reasonable time, or inform you that there will be a delay, do not hesitate to ask the receptionist to announce you again. We know your time is valuable and want to extend you every courtesy and consideration . . . If you wish to send a message or write a letter, the receptionist will gladly provide a stenographer. A telephone is immediately available for you. Current publications are in the magazine rack."

One page is devoted to listing about a score of "Persons you may wish to see". Included in this list are the heads of the several divisions and, from the purchasing department, P. J. Kuipers, Director of Purchases; N. M. Steffens, Assistant Director of Purchases; J. M. Powers and R. H. Pieper, Buyers.

There is a page of company history, indicating within the space of about 125 words the development from the tin shop of 1880 to a modern manufacturing plant with more than a half-million square feet of floor space dedicated, by the grandsons of the founders, "to giving the best possible service to our boss, the customers."

The major divisions get a half-page each — Housewares and Dairy Utensils; Met-L-Top Ironing Tables; Steel Packages; and the versatile Contract Manufacturing Division. There is no attempt to glamorize the prosaic and utilitarian nature of the company's products, but the impression is registered of sound quality, pride in the trade names and wide acceptance of these products, and a progressive policy keeping pace with today's industrial and living needs.

Reading time—about 3½ minutes. Result, a pretty comprehensive idea of the company's operations both as a supplier and as a customer, and a conviction that this is a good company with which to do business.

Example from Louisville

Somewhat more elaborate is the booklet used at the Wood-Mosaic Company, Louisville, Kentucky. It consists of 16 pages, 5½ x 8½ inches, with an attractive yellow cover bearing the message, "Whether you are here to buy from us or to sell to us, you are welcome." The information it contains is direct

and practical. For example:

If You Wish to Sell Logs or Timber.....See Lisle G. Holmes or John W. Kiefner

Lumber.....See H. Paul Miner or Joseph K. Detrick

All Other Items.....See Edwin V. Bulleit, purchasing agent or assistant.

Similar information is given for the benefit of the caller who comes on a buying mission, and there is a page listing the company's products, with details of the species available in lumber and in various types of veneers.

Company policies are helpfully stated. For instance:

"Salesmen will not be permitted to call in the plants without first checking with the purchasing department."

The center spread is devoted to an outline map of the city, showing the location of the Wood-Mosaic plant in relation to the downtown business section, railroad stations and air fields, and the principal highways. If that location seems to be somewhat on the edge of the city, the caller is reassured by the notation:

"We have a company operated cafeteria serving the noon day meal. You are welcome to use its facilities." And: "You are welcome to the use of our telephone for local calls."

In addition to the data relating directly to the company, there is a healthy local pride expressed in a brief history of the city and of the University of Louisville, a listing of points of interest in and around the city, and the nearby wonders of Mammoth Cave and Wyandotte Cave, all of which combine to make the caller's stay in that territory more interesting. Local hospitality extends beyond office hours.

Suggestion Box

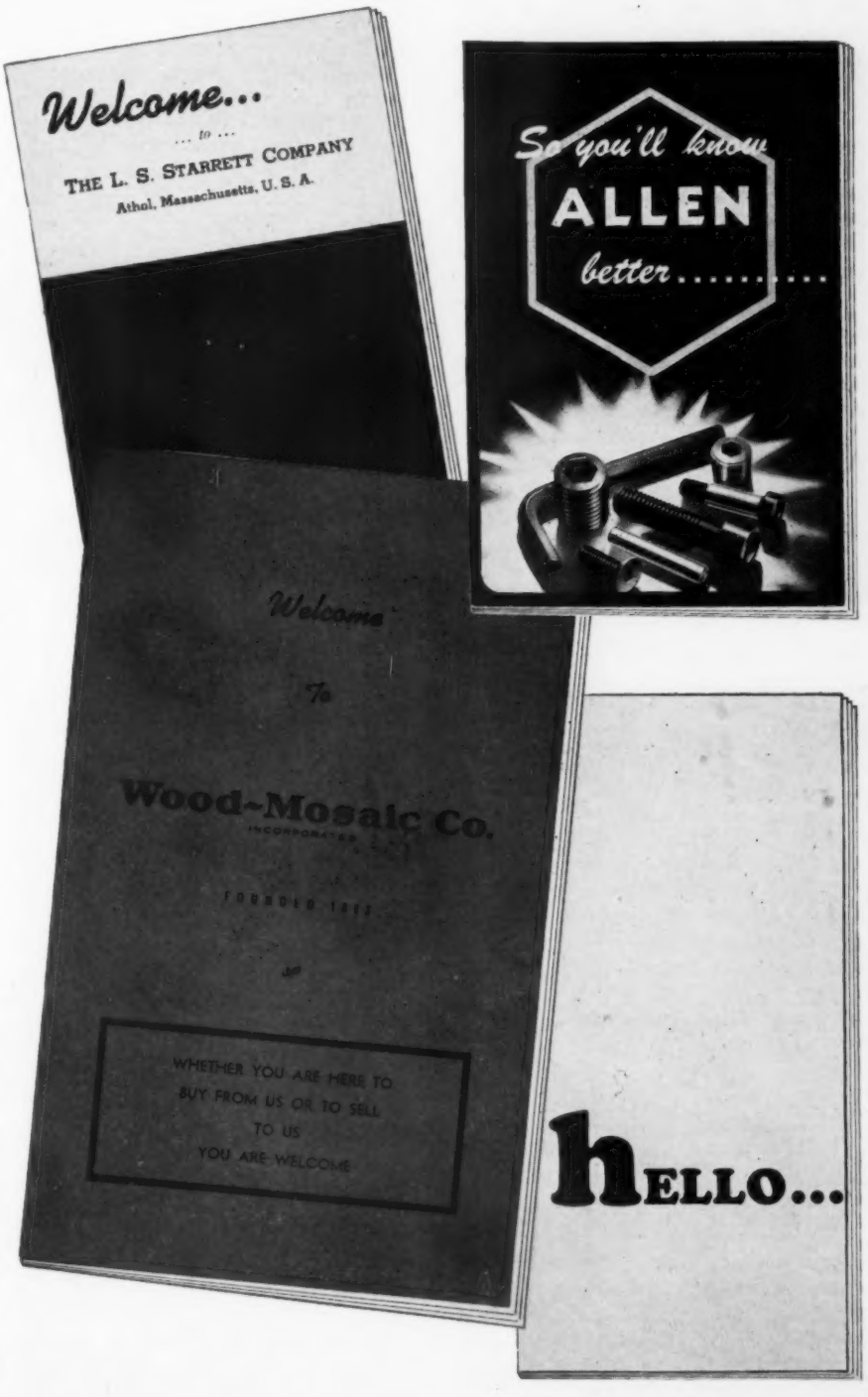
A novel variation of the map idea is contained in the booklet issued by the Allen Manufacturing Company, Hartford, Conn., to welcome the visitor "whether this is your first or fiftieth call". The city map is shown in panoramic form, indicating prominent landmarks such as the hotel, railway station, State Capitol, and Travelers Tower, and the main traffic arteries leading to the Allen plant are shown in red (with the prudent reminder that Sheldon Street is a one-way thoroughfare).

There is a reference to a wall chart hanging in the reception room, where the lines and functions of organization and the names of officials and department heads are detailed. The location of the various offices is indicated in the booklet. Information on the company's product emphasizes the qualities and tests required in the materials used for precision manufacturing—a point of importance to the potential vendor as well as to the customer.

The facilities of the company are placed at the visitor's service: "If you want to make a phone call, use the booth. Our receptionist will furnish time tables or get a taxi. She will also mail letters or send telegrams . . . There are rest rooms for men and women around the corner at the southeast end . . . Office hours are from eight to five, Monday through Friday. The lunch period runs from 11:45 to 12:45."

Of particular interest is the closing paragraph, printed on the inside back cover of the booklet:

"Thank you . . . We are naturally interested in anything that will help us do a better job. An interchange of ideas may be profitable to both. Through the people who call here we learn of new products, methods and services. Perhaps you too will



be able to take some worthwhile idea away from us . . . If you have a suggestion or criticism about our plant and personnel, jot it down on the back of this booklet and leave it with the receptionist . . . And call again."

New Departure

In nearby Bristol, Conn., the New Departure Division of General Motors Corporation expresses its welcome in a single sheet folder that does a very comprehensive and useful job with attractive two-color printing and economy of layout. The cover fold has a photograph of the entrance to the office building and the caption, "Welcome to New Departure". A brief history of the company "So you'll know us better" appears on the back, alongside a directory of the key officials in administration, manufacturing, purchasing, personnel, product engineering, production, public relations, quality control, sales, and advertising. The purchasing staff is listed in some detail:

J. A. Ashwell, Director of Purchases.

J. J. Jennings, Purchasing Agent.

A. O. Dahlgren, Assistant Purchasing Agent, Non-product.

A. A. Kreft, Division Buyer, Small Tools Purchases and Scrap Sales.

C. A. McCarthy, Division Buyer, Non-product.

L. J. Parks, Buyer, Non-product.

E. L. Lee, Traffic Manager.

The inside fold is dominated by an outline map of the city that shows not only the location of the two New Departure plants, but also the other principal industries of the community—the E. Ingraham Company, Wallace Barnes Company, and Bristol Brass Company—a feature of particular value to the outside salesman who wishes to cover the entire city on one trip. There are also directions for reaching the company's plant at Meriden.

A column at the left lists some pertinent information and suggestions in a half dozen paragraphs with with bold-face type headings for quick reference. The subjects include how to get in touch with a qualified alternate individual in case of inability to reach the desired person promptly, credentials required for admittance to shop departments, transportation schedules, incoming and outgoing phone calls, cafeteria service, and the like. Company products are shown in decorative photographs, without a sales talk.

L. S. Starrett Company

The L. S. Starrett Company of Athol, Mass., likewise uses a simple folder of welcome. The straightforward message, with obvious sincerity, states:

"To Our Visitors:

"It is a pleasure to welcome you to the home of Starrett Tools—there is no substitute for the opportunity to personally talk with our old friends and new.

"We hope it won't be necessary to keep you waiting. Please don't hesitate to ask our receptionist to keep you posted on any delays, if the person you wish to see momentarily is busy. We are glad to see you at any time of day.

"We are always pleased to have any information that is intended to be helpful, likewise offer it, and we want you to know we greatly appreciate the intelligent efforts of salesmen and others who benefit our business, as well as every other business.

"Our own men are calling on prospective customers, just as you are, and we would like to give you the same consideration attention that we hope they will receive in their calls.

"By the way....You will find a drinking fountain straight ahead at the end of the files—the rest room is sharp left, through the door just beyond the fountain.

"If you have any work you want to look over, or writing to do, make free use of the table or ask for a desk, and the telephones are at your disposal.

"There is literature on the table and reference material on our line in the wall rack, that you might find interesting.

"Should you want to plan other industrial calls, schedule appointments, or reservations, map out routes of travel or call a cab, our receptionist will be pleased to help you, and you will find highway maps, train and bus schedules available for your reference.

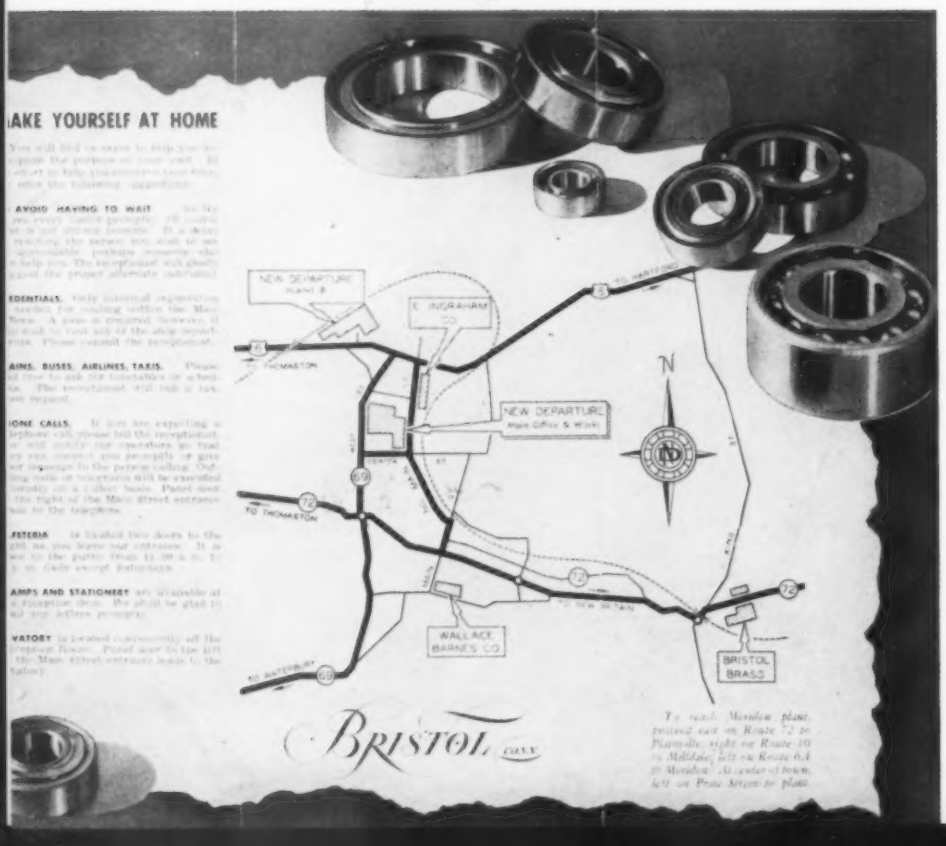
"About ourselves . . . You might be interested in knowing —and we say this with modesty—that we are considered the world's largest manufacturers of hand measuring and precision tools.

"If you, or your company, have any problems involving the use of such tools, Dial Indicators, Hack Saws, Metal or Wood Cutting Band Saws, Steel Tapes, or Precision Ground Flat Stock, please ask to see one of our men in the Sales or Engineering departments who are always glad to meet old friends or new.

"We hope you will find your visit with us interesting and worth while, and that you will carry away our own feeling of friendliness, and come back to see us again."

Information of general interest includes a listing of the local hotels, railroad and bus lines, and taxi services, all with phone numbers. A

(*Please turn to page 326*)



AS OTHERS SEE US

By Bob Ragase

IN Switzerland most of the trains are propelled up the great mountains by electric current. When these same trains coast down the mountains, their motors act as dynamos returning to the powerhouse most of the energy they have borrowed for the climb. The process works both ways.

Like the energy possessed by the train at the peak of the mountain every buyer—every contact man—in industry acquires through those contacts the power to be a potential salesman. It matters not whether a firm seeks reciprocal trade, some of its sales volume is based on the impression created by the contact men who represent that organization. As long as business men are human they will have a desire to trade with honest, square-shooting, personable people. Too often purchasing men—and other contact men—forget that they are *ex officio* members of the Sales Department.

Some purchasing men regard their position as one of regal authority. In normal times, when the buyer is always right, they demand—and receive—kow-tow homage. Fortunately, this group is decidedly in the minority, but it is unfortunately true that too few contact men in purchasing realize that their manners and personalities affect the goodwill rating of the firm just as much as those of the Sales Department.

There is a story making the rounds currently about the buyer who wrote a certain fellow purchasing agent in another city, requesting some information which he needed. The P.A. did not feel flattered that he had been consulted because he had a certain bit of knowledge and experience possessed by no one else. Evidently, his wife had gone home to mother that morning or he had experienced a severe case of mumps, because his reply made Xanthippe resemble an airy-fairy turtledove. To top it off, he showed his exact monetary regard for the other buyer's goodwill by deriding him for not enclosing a three-cent stamped envelope for his reply. Those who knew this once great P.A. feel that he dictated the letter under some sort of mental or nervous strain, but that fact has not soothed the personal feelings of the buyer, who now listens more attentively to competitor's salesmen.

Bad relationships can be costly to both buyer and seller. Consider the two firms that were trading unhappily as war-time bedfellows when the purchaser sent an order for a 9′ ell when a 9″ ell was wanted. The carrier was designated as Railway Express. The vendor questioned nothing, but complied to the latter, and that nine-foot ell has the distinction of being the only member of its clan ever to ride across the continent in a baggage car! For this bit of logger-headed nonsense, two big firms are now dealing only on a necessity basis.

A sense of humor is invaluable in alleviating a difficult situation, but it may backfire if both parties do not understand one another. An inexperienced girl buyer in a war plant ordered a carload of plastic pipe and directed that it be sent by parcel post. The salesman who received the order had a sense of humor and knew the purchasing agent would appreciate a joke. To keep it off the record, he wrote a personal letter to the P.A. in a wry style, praising the new enlarged services of the parcel post system. In closing he offered his congratulations on issuing the first purchase order taking advantage of the new service. But he shipped the pipe by fast freight.

Today when these two men meet they always drink a Manhattan as a toast to the wonders of the parcel post system. The matter closed without embarrassment to anyone, and the incident actually served to establish better relationships between the firms.

The contact man who lacks a sense of humor, may be so inflated with thoughts of his own importance that he has no room in his makeup for anything else. There was a certain sales manager who arrived at that position because of the excellent work he had done in sales priorities. In taking over the new position his only viewpoint was priorities. About the same time he was promoted, a new plant opened and the Purchasing Department was swamped with requisitions for start-up. The purchasing agent of the new plant sent the sales manager an order carrying the certification recommended by his priority adviser, but in a few days the order was returned with a curt note from the new executive to the effect that no goods would be sold without the proper priority certification. The boys in the Purchasing Department looked at one another, checked the priority records and then put in a call to the vendor. For the purchaser's effort of inquiry, he was rewarded with a verbal statement as curt as the note. The new sales manager explained that he was not conducting a course of instruction in priority certifications.

Despite the fact that he was taken aback the purchasing agent didn't lose his temper—yet. He phoned an expert in Washington who confirmed the correctness of his certification. Then in a polite letter, the PA returned the order stating that he had confirmed the certification in official Washington.

Once again the order was rejected. This time the egotistical seller explained his objection in grandiose language. His non-acceptance of the order was based on the fact that one of the five letters and figures in the title of the certification had been transposed in typing!

When the purchasing agent learned of the reason for the delay, he said some unprintable words, but maintained his temper with the vendor in order to expedite in good will. Several weeks later, the material arrived and the shipment had to be refused on the ground that the dimensions did not tally with those on the purchase order. In a moment of triumph, the purchasing agent wrote his old friend, the sales manager, and told him if he had paid half as much attention to dimensions as he did priority certifications, he would render a more satisfactory service. Since that letter was written, business relations between these two firms have ceased.

In protecting personal pride, the egotistical man exposes his vanity and appears ridiculous in the eyes of other men. Like the proverbial ostrich with its head in the sand, the vain person feels that all is well, but everyone else knows the true situation. An admission of mistake adds more prestige than an attempt to hide facts that will come to light sooner or later.

There is a certain telephone salesman, of this nature, who made himself the laughing stock of two organizations by his obstinate refusal to admit he was wrong. Irritated by a series of this order-taker's antics, a buyer told some of his colleagues, i.e., foremen, engineers, and buyers, that if he ever met his antagonist he would personally "knock his teeth so

far down his lying throat that the molars would be in a perfect position to gnaw at his trousers seat."

One day an emergency broke out and a rush call was sent to the firm employing the offending salesman. A consulting engineer was rushed by private plane and was met at the airport by an engineer who had known him for many years. Enroute to the plant, these old friends commented on the animosity between the buyer and the salesman. Then they cooked up a prize piece of nonsense to embarrass the buyer.

Arriving at the plant they made their way to the Purchasing Department. By "coincidence" all of these associates who had heard the violent boast of the buyer were present when the engineer ushered in the stranger. The engineer presented the newcomer to the buyer: "Bill, this is your old telephone friend, Mr. Blank."

The group stood by to see what would happen, but the buyer stood his ground. "Don't try to fool me!" he laughed. "One look at this man and I can tell that his parents were normal, legitimately married people." Everyone laughed so hard that the hoax could not be repaired. The story has made the rounds and everyone knows all about it except the stuffed-shirted egotist who still has his head in the sand.

Some executives are willing to admit mistakes if they can keep everything off the record. It seems illogical to fear revelation of the ability to see an error and profess it so that the confusion surrounding the transaction is cleared up.

There are some men who would be willing to admit their errors if they didn't have to admit them to their subordinates. We know one vain purchaser who telephones his apologies during his secretary's lunch hour. He makes no attempt to conceal his mistakes to the salesmen who have known him to make these same mistakes for more than twenty years, but he tries to appear perfect to a girl younger than his own daughters. In setting up his tin-god dignity, he has spent hundreds of dollars on long distance calls in order to impress a girl of secondary education that he cannot be wrong. She would probably be more impressed by a level-headed admission of the human tendency to err.

A great purchasing agent, who prefers to remain anonymous, presents every new employee in his department with a mimeographed sheet which advises them:

A PURCHASING MAN IS A CONTACT MAN

1. To apologize is not a grovelling humiliation—it is merely an admission that a mistake was made and the admission of that mistake is announced to remedy the error before additional harm or wrong can result.

2. That everyone makes mistakes is a trite expression, but it is the truest of all axioms. We should always be willing to accept an apology graciously because the person making it probably has suffered enough already. Perhaps mother-in-law trouble, a sick child, a headache, faulty glasses, a noisy secretary, or too much work caused the trouble in the first place, and in the second place he has suffered enough before asking your pardon.

3. Don't hesitate to defend yourself if you feel you are right, but do it in such a way that your correspondent will recognize your bigness. George Washington had to defend himself and his men at Valley Forge against men who were enjoying all the comforts of life, but his letters *explained* rather than *exclaimed*.

4. Address your correspondent with the same respect you would if you knew he was slated to become your boss next Monday. Likewise treat your secretary as though she was the wife of your boss.

5. In writing letters do not hesitate to be yourself. Your personality should be as evident in a letter as the individuality of your signature. It has been suggested with some reason that grammar be dropped as a public school subject inasmuch as language is only a means to an end and a correspondent should be free to choose the mode just as two travellers headed for the same destination are free to chose different vehicles.

6. To alleviate any adverse feeling your letters may create use a sprinkling of these words: Thank you — Appreciate — Grateful — Gratified — Pleased — Pleasure — Favor — Your Courtesy — Your Assistance — Your Cooperation.

7. Be careful of the choice of words in your letters. A misunderstanding can result over the interpretation of one word. Get the *exact* word. Brevity is a prime quality in business letters, but guard against brusqueness.

8. A prominent writer answers his mail — admirers and critics alike — with a mimeographed slip of paper

(*Please turn to page* 328)

"My boss wasn't open to constructive criticism, either."

When product prices outrun people's purses it's time to look at the over-all picture and choose between stability or depression

●

By C. W. S. Parsons
Consulting Management Engineer

PRICING POLICIES AND THE P. A.

TO-DAY the industrial purchasing agent is directly responsible to general management for maintaining adequate sources of material, parts and supplies; and properly so. In that connection he participates in the investigation of conditions and in the determination of facts that lead to top-management decisions as well as to action taken by the heads of other major operational functions such as engineering, finance, production, etc.

For example, he may discover that someone has developed a specialized fabrication shop to the point where it would no longer pay the company to continue making a certain sub-assembly; in addition to which the factory space released might well be used to advantage for other work.

He may be the means of bringing to the attention of engineering a new and less expensive fastening device.

Again, he may suggest that finance consider the possibility of assisting some supplier in the working out of a raw material problem aggravated by the need for buying enough to obtain carload prices.

Or he may see that another supplier has an opportunity to learn from production how to make certain parts at least cost and still maintain the required finish.

Whatever salesmen come and tell the purchasing agent he checks against its value to the company in the light of policy and current program. Whatever he tells the salesmen is legitimately shaped to the ends of benefitting the company in its current program and of carrying out its understood policy.

These things being the case, it appears that there may also be some point in the purchasing agent's considering the pricing policies of subcontractors, vendors and suppliers, particularly in the light of present conditions and future possibilities.

Research pays its way by paving the way for sound price reduction

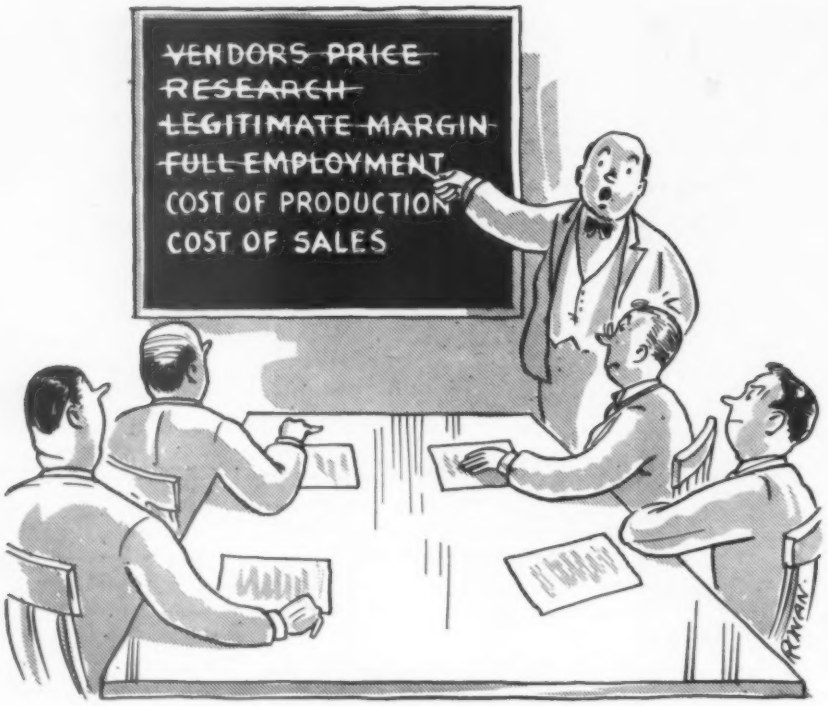
It can be agreed that the purchasing agent should know what prices he should be paying, and why. Maybe he should also know something about the kind of prices he is going to have to pay a little later on.

If he could know, or if he could know what would make it possible for him to know what to expect, or if he should know that if he took certain steps to indicate to vendors in given important instances what kind of pricing policy the company might encourage, then more favorable prices could ultimately result. If these things could be, what stand should he take?

There are certain things that it is already generally recognized are acceptable for a purchasing agent to do. In fact he *must* specify engineering standards in the sense of design requirements. He regularly controls financial standards in that he must know that vendors can produce sound operating statements and financial balance sheets. He commonly exacts production standards in the sense that he must make sure suppliers' shops are adequately equipped and that they have the necessary know-how.

Now it may be important for him to have the support of the general manager in influencing or questioning vendors' pricing policy with the object of leading them in the direction of improving these very standards just mentioned through seeking to achieve still sounder operation in a program designed to lower costs and prices both.

Assuming that there were a more satisfactory way of getting prices down than is generally resorted to, it would appear that the front office might encourage the purchasing agent to look into how the company's suppliers are working on this problem, if at all, and perhaps tip



The easy way of cutting costs is rarely the best way.

them off, if occasion required, to a better way—if it were to everybody's advantage, including the company's.

Suppliers and Customers

The stage having been set, so to speak, it would seem to be necessary to bring on some of the actors. Suppliers come in all shapes, sizes and kinds. But rather than parade them all, it seems needful only to look at a few significant types, for our purpose.

Old established companies have since the war tended to stay in a groove. When material or products have had to be allocated, they have favored old customers. They seem to have hung back when talk of expansion came up. Often their managers have suffered real pangs over the size of the overhead. Generally they seem to have been making money, in 59¢ dollars.

For many months some of the newer companies were champing at the shortage bit straining to gallop into wide pastures with operations on a big scale, anxious to begin shoveling out large volume output to fill the orders piled up in big backlogs, that in some cases have had a tendency to disappear like dry ice.

Many reconverted war contractors have been discovering that they should have done a more thorough job of measuring markets and competition before launching into tooling and production programs.

Nevertheless, 40-odd million industrial workers earning $50 a week, plus nearly half again as many engaged in some other paid activity, have a greater purchasing power than this country has ever before known. So long as most of them keep working and producing they will keep on consuming the products and services of agriculture, commerce and industry, and hence maintain an active economy.

But it is what happens in the processes of buying and selling, all over the country, that will determine whether some of these people are going to keep their jobs. It is all very well to say that we have a backed-up demand resulting from the war. That was true in 1920 when a similar though not so gigantic demand existed until prices ran away from people's pocket-books. There is no effective demand where there is no money to buy.

The important point now is that many prices are running ahead of people's purses. Ways must be found to lower prices in an orderly manner, under control, to forestall a disorderly contraction of prices, out of control, that if severe enough could amount to a collapse.

Appraising Price Policy

In connection with the operations of buying and selling, it is common for people to speak of the law of supply and demand as if it were an entirely natural process, like the weather, that operates automatically to adjust prices. But that is not an altogether accurate conception. Nor does it tell us that the alternate to an OPA is an uncontrolled market. Far from it.

All of the analysis that could ever have been made by OPA investigators to determine how given manufacturers produce certain articles, and what they should cost, judged by reasonable standards, can be effected more intelligently by any competent industrial purchasing agent in the course of his job of negotiating contracts for supplies of parts and material and services, making use of his own company's engineering and production departments for assistance on technical points. The only element that is sometimes lacking seems to be the desire to get the facts with the object of stimulating action to lower prices systematically.

When a purchasing agent appraises the method of management in a vendor's plant, to determine how he produces, measured by practical standards, he is not appraising industrial weather, but management policy. Similarly, the method of management adopted by a vendor to govern the construction of prices, may be hit or miss; it probably follows conventional patterns that may or may not apply in the particular circumstances, and it may express the company's determination to find a way to lower prices systematically over a period of time. Whatever the facts, they are determined by the company's policy, or lack of policy. Good, bad or indifferent, such policy would seem to be of direct concern to the purchasing agent as comprising a measure of the value of that vendor to the buyer's company.

The Drive for Volume

In following conventional pricing patterns, a producer is very likely to figure on operating at full capacity in order to spread the overhead burden over a large volume of output. Profit margin is set reasonably close, percentagewise, so as not to invite too much competition. Total profit required is supposed to come from the volume output. But for at least two reasons, it does not always pan out that way.

Don't buy yourself a cut-rate depression that will prove dear at any price

The drive for volume business may mean encroaching on what competition conceives to be its preserve. Normally, most industries do not sell more than 67% of one-shift capacity. Hence capacity operation by one company means the sale of more than its average share of total output, corresponding to its proportion of the total capacity of that industry.

At this time the controlling factor frequently is the supply of raw material or parts. But even so, many companies will do almost anything including going into a grey or black market to get enough material to hold up their end of the sales.

Therefore no matter how active the market, there seems to be a frequent excuse for comptitive price-cutting, or taking business at small profit, or at a loss. Any shrinkage in volume therefore means that overhead may not all be absorbed. Therefore the drive to cut costs results. Very often a company in this position has a well run shop. That means that the business of cutting costs mainly centers on laying off people in the "overhead", who may be performing valuable services to production, and on putting pressure on suppliers, who in turn may find it necessary to cut down on staff to offset price cuts. The effect of this sort of thing on the general purchasing power, when numbers of people lose their jobs, is obvious.

Improperly Priced Items

Another reason why a company does not secure the total profit earnings it wants to, is directly centered upon pricing methods. Many managers consider that so long as all prices on the various products or items in the line average out to a satisfactory estimated profit, there is nothing to worry about. To a great extent this may come from the fact that cost accounting furnishes lump sum figures from which unit estimated costs are derived for the purpose of setting prices. But careful examination of the facts shows that such thinking and practice lead to many items being under-priced or over-priced.

Over-priced items normally will be in least or small demand, so long as competitive sources exist. Under-priced items are likely to be in considerable demand. It frequently happens that much of a factory's facilities are tied up producing under-priced items at a loss. It takes a lot of strenuous effort to make what's left of the shop earn enough profit for the whole plant, including enough to offset the loss items. Often it just cannot be done.

If all items are correctly priced, there will be a re-distribution of sales of the various items, but not necessarily a general average higher price. To the extent that proper pricing policy in the big is brought to bear, there may even be a reduction in average prices by reason of the improved management that results.

An Orderly Program

The conventional way of operating seems to be to wait until something happens threatening or actually drying up profits, and then to start trimming internal services by laying people off, and making extraordinary efforts to economize on purchases, which may cause suppliers to cut down on the work-force, too. But there is another approach to price reductions that creates jobs instead of destroying them. It contemplates an orderly lowering of costs at the same time providing for the regular earning of profits sufficient to pay dividends.

The principles involved were tested during a ten year period of research undertaken some years ago by the late W. L. Churchill, who sought to determine why so many apparently well run corporations failed to pay dividends except in years of peak prosperity. By a process of comparison and elimination Mr. Churchill found that the principles here briefly discussed were closely approximated in the pricing policies of those companies he studied which did pay regular dividends.

The starting point is acceptance of the axiomatic proposition that an orderly lowering of costs and prices can ordinarily best be achieved through the step-by-step adoption of the best in techniques and processes and management.

But it is not in the cards to be able to draw only upon personal ingenuity or past experience for today's best in techniques and processes and management. Except in the few instances where companies have access to management geniuses, it is necessary to establish a definite and continuous program of research and development directed to the end of improving operations at every level and in every department.

This research, which must be undertaken by management itself, with or without staffing, contemplates a regular and thoroughgoing appraisal and study of ways and means for the development of better organization management, more effective engineering in its various aspects pertinent to company operation, more adequate selling effort, more revealing accounting, less costly financing, more satisfactory procurement, better personnel management, and more effective methods of production. The sum of these amounts to greater productivity.

Research Justifies Itself

By way of encouragement in this idea, it is but necessary to look at the blue chip corporations, the country over, to see where sound policy providing for adequate research and development has carried them. And companies in that category, like Ford, General Motors, General Electric, Westinghouse, the Du Ponts and hundreds of others, are job builders. Progressively improving products, methods and management, and lowering costs, their markets keep widening as more and more customers can afford to take advantage of the outstanding values offered.

Allowing for recent price dislocations due to material shortages, sudden wage increases and 59¢ dollars, all of which will have to be compensated for by research and development, the general picture relating to these producers has been one of prices lowered step by step as the result of constantly improving operations. By maintaining a pricing policy providing for regular dividends and for the costs of research and development, was how it was done.

How were sales made at full profit margins? It was necessary to spend a sufficient amount on selling effort to bring in the normal volume of sales at a profit.

Sales Cost Ratio

Churchill determined that in this country it has required on the average two people to sell the production of one, and during his research satisfied himself that the sales cost to the ultimate consumer averaged twice the conversion cost, which is the sum of labor and overhead attributable to production, without counting any of the costs of mate-

Government controls can accomplish nothing that intelligent management cannot do better

To cut a bigger slice, there must be a bigger pie.

rial or sales.

It appears that it takes that much "selling power" to establish the required "earning power". In other words, there seemed to be an economically correct amount of selling effort necessary to put the story across so as to make the buyers realize the value of what they were getting.

That might be a little hard for a purchasing agent to take. Therefore this is the place to point out that the cost of selling to factories and wholesalers is properly *half* of the conversion cost; the cost of selling, factory to retailer, is *equivalent* to the conversion cost; and the cost of selling consumers, i.e., direct factory sales, normally should be *twice* the conversion cost. The price to the ultimate consumer is not considered to be economically sound if it is higher than the factory-direct-to-consumer price, assuming that the services performed by the dealer or retailer are the same as those performed by the factory in making direct sales.

An important feature of pricing according to Churchill's "Conversion Cost Method", is that the profit margin which includes the amount allowed for research and development, always equals conversion cost, and is entirely independent of the cost of purchased items. In other words the manufacturer is supposed to earn his profit on the work he does, not on the work that someone else does. The same principle holds true in connection with profits in the chain of distribution.

It has been said that the economically correct amount of selling effort needed to establish the earning power of the product, will produce the normal volume of sales at full profit when advertising and selling are effective. In this connection one other point is very important, in fact crucial. "Normal" volume means the manufacturer's share of the total sales of the industry corresponding to his share of the one-shift capacity of the industry.

On this point the company is faced with the necessity of making a major policy decision, whether to go after and obtain normal volume at full profit, or whether to drive ahead after full capacity and so invite the price-cutting competitor retaliation that so often ends with nobody making any money.

Maybe the buyer thinks that that way of doing business will get him better prices, and maybe he is buying his way into a depression, which is not cheap at any price. Naturally he is going to have to know what he is getting for the price he pays, so it looks as if he'll have to be aware of whether his suppliers have adopted a pricing policy tied in with research and development adequately organized for the purpose of lowering costs and prices.

If a supplier begins to lay off help to keep his head above water, it may be that those laid off may directly or indirectly act to reduce the number of customers buying the products of the purchasing agent's firm. This is only another point in evidence that suppliers should be encouraged to adopt pricing policy that emphasizes competitive productivity rather than competitive price-cutting.

Perhaps the only convincing way for a company to demonstrate to its own satisfaction that the purchasing agent should encourage vendors to adopt a pricing policy essentially tied in with a program of research and development, would be for it to try such a policy out for itself with some item, or product, or line, so as to be in a position to say that a concern cannot miss in its effort to lower costs in an orderly manner if it undertakes such a program.

Industry in many areas is making the kind of money to-day that would permit them to feel free to find out how to establish such a policy. It does take a certain spirit of enterprise to go for a program of research and development. It undoubtedly takes more than the average amount of get-up-and-go to begin building up the kind and size of selling organization that will be able to maintain the full earning power of the company, in proportion to total overall of demand on industry capacity, if and when things should slacken.

It surely takes some hard-headed, realistic thinking to study through the implications of these facts and principles. And it takes something more than just smartness to resolve to prove that if others have grown strong and prosperous by sticking to some such policy, then "this company" is going to find out how to go about it, and do it, too.

And probably more than anything else it is likely to take a peculiar brand of mental stamina for a purchasing agent to be consistent in encouraging suppliers to talk about their pricing policies and if necessary give serious consideration to the advantages in adopting the kind that commits the company to seeking energetically to lower prices a step at a time as management's applications of the findings of research, painstakingly developed, bring about improved operations, greater productivity, lower costs.

Job-Makers or Destroyers

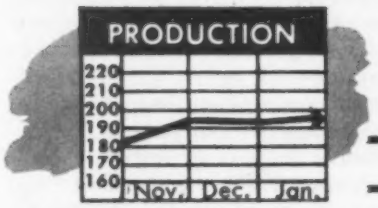
Every element in a vendor's costs should reflect the utilization of the best in techniques, processes and management available in the circumstances.

Now that he understands how that can be accomplished, the pur-

(*Please turn to page* 324)

The drive for greater volume may also result in driving down profits

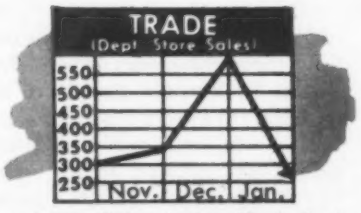
Where We Stand



Today's Business Trends As Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index (est.)	1935-39=100	196	192	182	+ 2.0	+ 7.6
Steel Production (Weekly)	000 net tons	1,723	1,710	1,607	+ 0.8	+ 7.0
Electric Power Production	mil KWH	5,228	5,218	4,852	+ 0.1	+ 7.7
Bituminous Coal Production	000 net tons	11,550	13,300	11,489	—13.0	+ 0.5
Auto, Truck & Bus Output	units	107,837	109,728	59,988	— 1.7	+79.0
Petroleum Output	000 bbls	5,313	5,265	4,530	+ 0.9	+10.6
Engineering Construction	000 $	71,733	131,842	74,232	—48.0	— 3.3

All Commodities (Bur. Labor Statistics)	1926=100	164.4	161.0	139.1	+ 2.1	+18.2
Semi-Manufactured Articles	1926=100	157.9	157.3	135.1	—	+16.9
Raw Materials	1926=100	184.5	180.0	153.1	+ 2.5	+20.5
Manufactured Products	1926=100	156.6	153.3	134.1	+ 2.1	+16.8
Steel Billets, Pittsburgh	ton	$45.00	45.00	42.00	—	+ 7.1
Steel Scrap, hvy, Pitts., del.	ton	44.50	43.00	32.43	+ 3.6	+37.0
Copper (Electrolytic)	lb.	.21½	.21½	.19½	—	+10.0
Cotton, mid., 15/16"	lb.	.3620	.3721	.3202	— 2.6	+12.1
Rubber, (Rib-smoked sheets)	lb.	.21⅝	.21⅝	.25¾	—	—16.0
Wheat (No. 2)	bu.	3.32⅝	3.32½	2.32¼	—	+43.0



Dept. Store Sales Index (Fed. Res)	1935-39=100	251	507	232	—50.4	+ 7.9
Commercial Failures (Dun & Bradstreet)	no.	58	60	30	— 3.3	+93.3
Freight Carloadings	cars	831,447	878,588	830,945	— 5.0	—

FINANCE

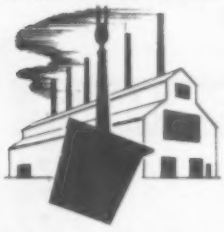
Stock Prices (Standard & Poor's)	1926=100	121.2	117.8	121.0	+ 2.9	—
Bank Clearings (Dun & Bradstreet)	mil $	7,180	13,652	6,843	—48.0	+ 4.8
Federal Reserve Credit	mil $	22,568	22,934	24,105	— 1.1	— 6.0
Currency In Circulation	mil $	28,374	28,722	28,518	— 1.2	— 0.4

Materials & Markets

Materials & Markets

METALS

Increased freight rates, and rises in price of scrap and pig iron have resulted in price increases for several steel products . . . wire nails, barbed wire, wire fencing, tie plates, joint bars, railroad wheels and axles. No relief is expected as steelworkers gird for another wage increase demand and higher coal costs loom.



Production continues at a record high, but nowhere near enough to satisfy demand. Specific allocations of scarce steel products based on recommendations of the recently appointed industry advisory group are being readied. This voluntary distribution agreement has been authorized by the "anti-inflation law"

Scrap is still in extremely short supply, and will continue so during the cold months. Scrap steel and pig iron prices have risen in the past month, and pig iron prices are climbing close to those of scrap. Good coking coal is still short.

The aluminum pinch that developed last month shows few signs of letting up as demand stays at a high rate, particularly for sheets. Substitution of aluminum for steel and other metals continues apace. After announcing that no more orders for sheets would be taken, one big producer has qualified that by stating that the company is taking orders for "possible" second quarter delivery. Major domestic producers have stated that ingot prices will remain at present 15 cents per pound level despite action of leading Canadian producer in adding 1 cent per pound. Canadian aluminum ingots are now priced at 15 cents per pound at a Canadian port for export.

The recent increase in prices for Bolivian tin ore announced by the Reconstruction Finance Corp. is not certain to result in a greater abundance of tin, according to some sources. It is pointed out that the amount of tin available is still limited by the lag in world supply, and probably will remain so into the middle of 1949.

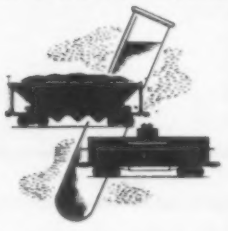
Demand for copper shows no sign of slackening, and world production continues to increase slowly . . . Rising costs are said to portend a rise in price of zinc, but so far prices have remained firm. Demand is still great, and supplies have been cut by government stockpiling. Lead is still in great demand and short supply despite increased production both here and abroad. Prices remain firm.

CHEMICALS

Tight supply situation remains on caustic soda (which may be placed under new allocation systems), chlorine, soda ash, ammonium sulphate, as industrial demand stays high. Glycerin continues in heavy demand and there appears little prospect of a price drop as fats and oil prices stay up.

FOREST PRODUCTS

Abnormal demand for lumber is expected to come back strongly following the seasonal slowdown of the winter months. The hardwood market continues strong with plenty of buyers but the supply of upper grades is still limited. Prices are still strong and any change in the near future will probably be upward. Recent Canadian softwood export rules allowing an increase of softwood imports from that company may have a depressing effect on softwood prices here. Plywood production is being maintained at record peace-time level, but demand continues several times as large as productive capacity of the industry. Exports of softwood and plywood under the Marshall Plan are expected to be substantial.



Paperboard production, new orders and unfilled orders continued to climb, following holiday slowdown. Increasing production facilities are not expected to alter prices considerably in the face of rising costs.

FUEL

Large requirements of petroleum products for the foreign aid program are expected to add a tremendous burden to the already overtaxed facilities in this country. Domestic shortages have been aggravated by severe cold weather, and demand is still at a high level. Recent sharp rises in heavy fuel oil, however, have cut consumption somewhat as industrial users turn to coal. Voluntary allocation program by an industry advisory committee has not been formally set up, but is expected shortly.

European requirements for coal from the United States can be met without any additional strain, according to official sources, despite increased domestic consumption because of cold weather and fuel oil shortage. Anthracite and bituminous production continues high, with easing of freight car shortage helping considerably. Increased freight rates, and probable wage increase appear to leave no room for any decline in prices.

AGRICULTURAL COMMODITIES

Improvement in the winter wheat outlook and favorable crop advices from abroad have brought prices down. Proposals by Bernard Baruch to the Senate Foreign Relations Committee that food and agricultural prices be reduced in exchange for a guarantee of an assured price to farmers for the next three years are said to have contributed to the decline.

TEXTILES

Cotton prices weakened following Mr. Baruch's testimony before the foreign affairs committee recommending price controls and government regulations, but large exports, including those necessary under the Marshall Plan are counted on to keep prices stable.

Burlap production in India is on the increase, but political difficulties there make it uncertain whether users here will benefit during the next few months. Quotas for shippers were recently increased, but spot and futures prices remain high.

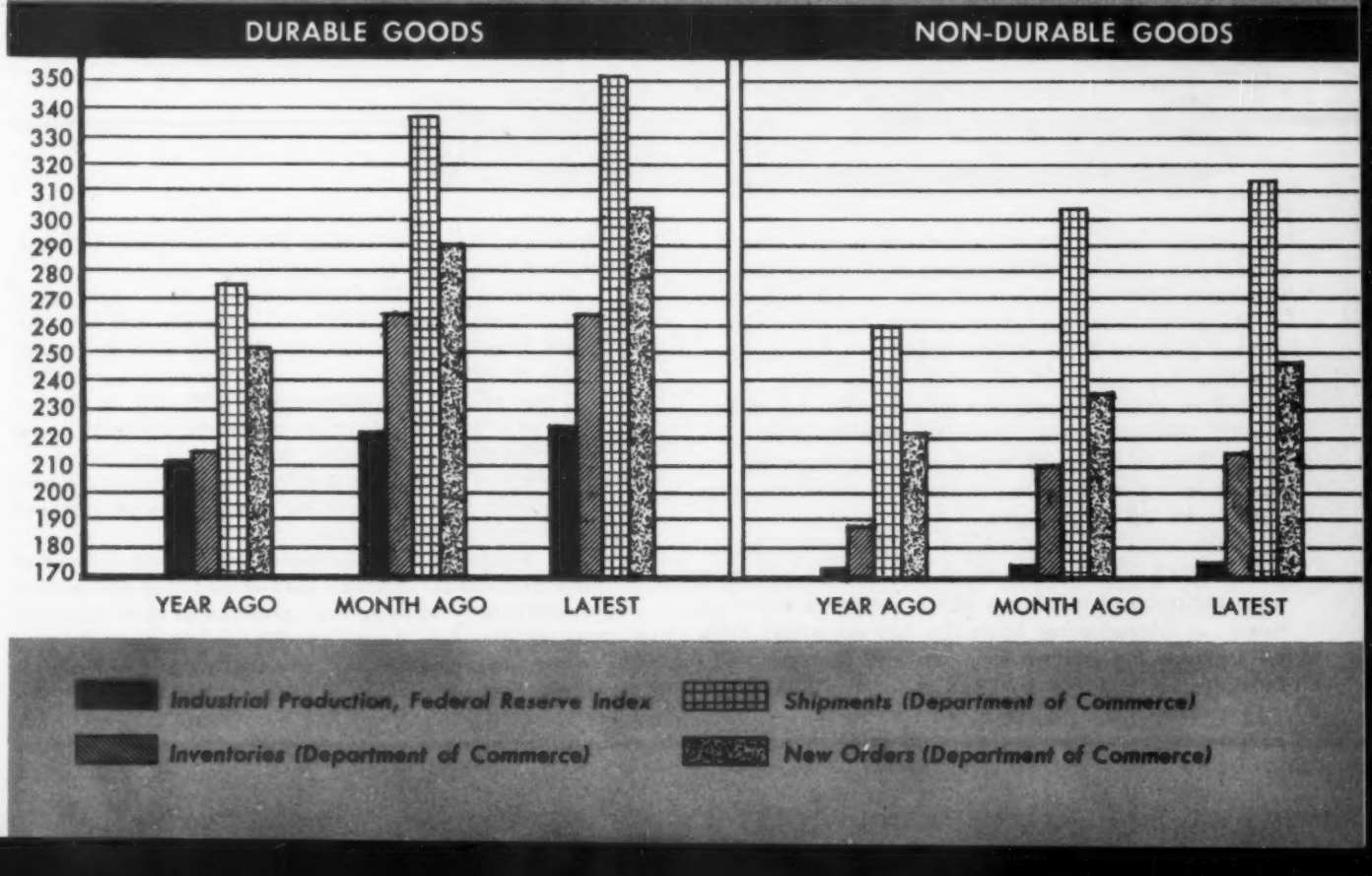
MANUFACTURERS' INVENTORIES, SHIPMENTS AND NEW ORDERS

	1946	1947					
	November	June	July	August	September	October	November
New orders, index, total†.....avg. month 1939 = 100..	233	245	230	231	257	257	269
Durable goods industries .....do.....	254	271	260	260	287	290	307
Iron and steel and their products .....do.....	274	304	271	285	309	304	347
Machinery, including electrical .....do.....	314	315	328	304	337	345	349
Other durable goods .....do.....	186	202	194	199	230	232	233
Nondurable goods industries .....do.....	221	230	213	213	238	236	246
Shipments, index, total† .....do.....	267	292	271	282	313	318	328
Durable goods industries .....do.....	278	323	287	301	332	338	351
Automobiles and equipment .....do.....	235	280	264	252	296	301	308
Iron and steel and their products .....do.....	237	274	251	271	294	303	304
Machinery, including electrical .....do.....	315	395	340	351	392	391	412
Nonferrous metals and products .....do.....	319	349	291	311	335	352	396
Transportation equipment (exc. autos).....do.....	503	669	496	497	518	513	568
Other durable goods industries .....do.....	270	268	259	289	316	320	319
Nondurable goods industries .....do.....	260	271	260	269	300	305	312
Chemicals and allied products .....do.....	250	265	252	256	295	296	302
Food and kindred products .....do.....	306	298	292	294	332	338	368
Paper and allied products .....do.....	242	277	250	266	279	287	292
Products of petroleum and coal .....do.....	219	263	263	266	280	280	309
Rubber products .....do.....	313	301	289	300	N.A.	N.A.	N.A.
Textile-mill products .....do.....	221	216	188	205	235	234	231
Other nondurable goods industries .....do.....	240	265	256	271	301	308	286
Inventories:							
Index, total .....do.....	200	228	228	231	234	236	239
Durable goods industries .....do.....	215	254	256	259	263	264	265
Automobiles and equipment .....do.....	259	321	320	327	331	329	322
Iron and steel and their products .....do.....	137	153	157	160	165	164	165
Machinery, including electrical† .....do.....	276	339	341	343	345	350	354
Nonferrous metals and products* .....do.....	167	186	191	191	193	190	184
Transportation equipment (exc. autos) .....do.....	781	966	970	990	1019	1017	1031
Other durable goods industries† .....do.....	147	172	171	171	174	177	177
Nondurable goods .....do.....	187	205	204	207	208	211	213
Chemicals and allied products .....do.....	185	227	225	223	219	217	220
Food and kindred products .....do.....	199	194	196	209	214	219	222
Paper and allied products .....do.....	183	218	229	239	245	246	247
Petroleum refining .....do.....	134	145	148	152	157	157	160
Rubber products .....do.....	215	291	272	262	N.A.	N.A.	N.A.
Textile-mill products .....do.....	173	186	186	185	185	185	189
Other nondurable goods industries† .....do.....	207	228	222	218	217	226	232

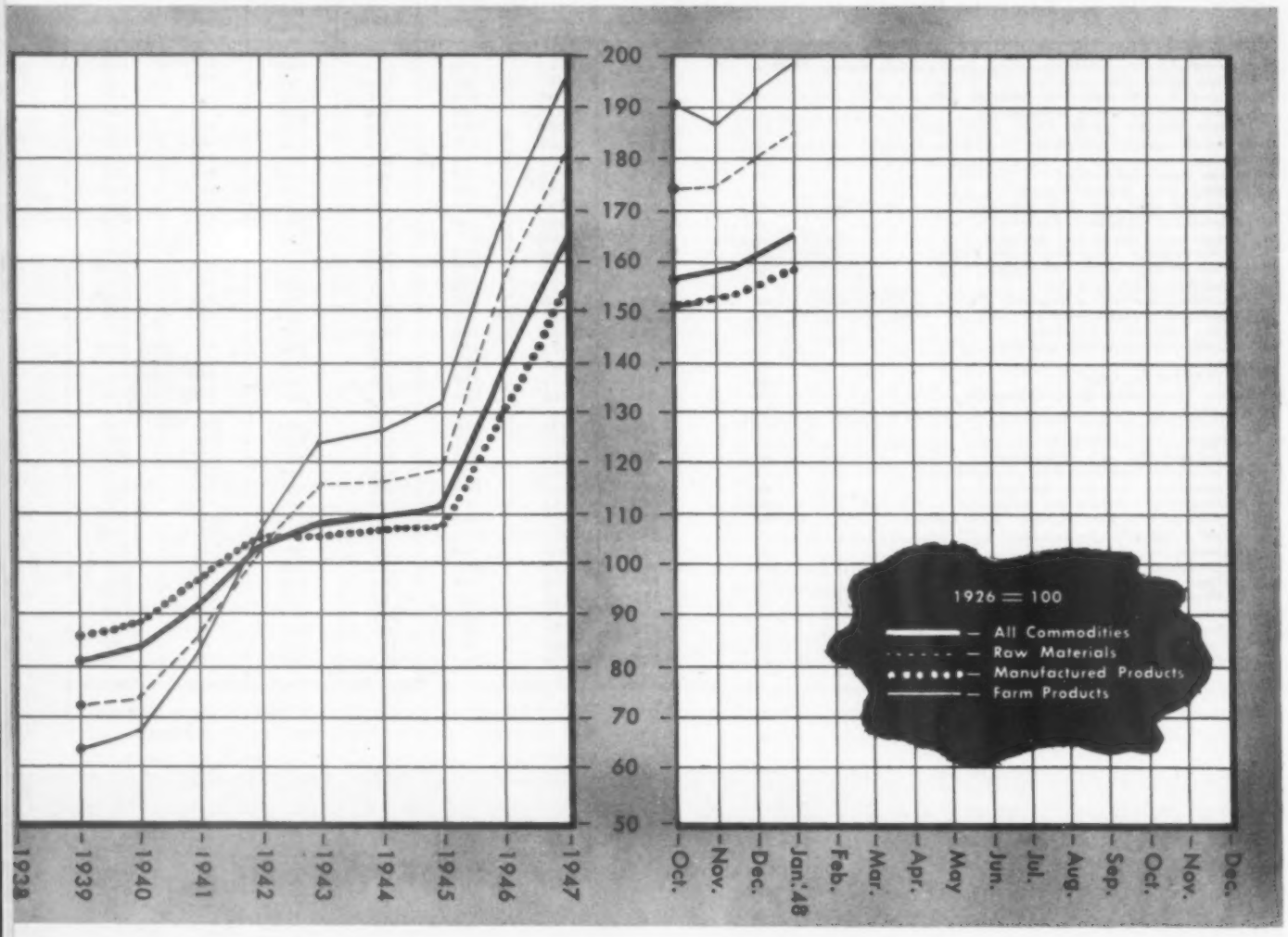
Source — Department of Commerce

N.A. — Not Available

Inventories, Shipments and New Orders Compared With Industrial Production



The Price Picture



Straws in the Trade Wind

American Iron & Steel Institute announces that the steel ingot capacity will be raised by 5 billion tons by the end of 1949 . . . previous estimate was 3 billion tons . . . Reserve Mining Co. of Cleveland, O., will begin a project on north shore of Lake Superior to extract iron ore from taconite . . . Completion of the plant is expected to take 5 years; annual capacity 2.5 million tons . . . Wilfred Sykes, president, Inland Steel Co., states there is plenty of ore in unexplored areas, but companies do not want to pay taxes on mines they may not use for 25 or 30 years.

Construction costs may drop from 5 to 10% by the end of 1948, according to the Producers' Council, Inc., an association of leading building materials manufacturers . . . Weyerhauser Sales Co. has cut prices 10% on Douglas fir, western hemlock and red cedar . . . Estimates of building in 1948 run from $14 billion (Producers' Council) to over $15 billion (joint estimate of Departments of Labor and Commerce).

Standard of California announces that exploratory well it has been drilling in Kettleman Hills, Middle Dome is apparently a success . . . the well is flowing at a rate of 488 barrels daily and approximately 4,200,000 feet of gas . . . Government oil monopoly of Mexico believes it has found a rich oil producing field about 100 miles north of Tampico; test well will be drilled . . . Secretary of Defense James V. Forrestal has proposed a synthetic fuel program for this country to increase fuel output by 40 per cent.

HR legislation establishing a government-controlled American rubber industry with a 675,000 ton annual capacity and requiring it to produce at least 225,000 tons a year has been introduced. The bill refers to "American-made rubber" and the word "synthetic" is not used.

WE MUST BUY IF WE WOULD SELL

• ***By Grey Leslie***

AMERICAN businessmen have a vital stake, individually and collectively, in the foreign trade policy of this Government. Whether or not they wish it, they are confronted with the pressing necessity of making a choice and a decision. Either they will, as members of the American industrial family, accept their individual share of the responsibility of world leadership in economic reconstruction, or they will leave the decisions and policy entirely to the government and abide the consequences, passively or critically, for good or evil in their collective interest.

There is an unwarranted pessimism current with regard to declining American exports. The volume of that business for the first half year 1947 was about fifteen billion dollars—four times greater than that of the pre-war years. While lower levels may be expected, they will certainly exceed the eight or ten billions sighted as a desirable goal. The unfortunate injection of the question of the gold at Fort Knox as an issue, fogs up the entire matter. The kernel of the matter is a revival of foreign production. That can be obtained by exporting American know-how, machinery, products and distribution techniques rather than by the use of gold, Government loans, or an ever increasing flow of gifts and charities. *Dollar exchange can be created only on a firm basis of production and a sincere effort to accept imports into this country in some semblance of a trade-balance ratio.*

Exports, in the final analysis can be paid for only by actual goods and materials, not by loans nor tinkering with foreign exchange. Every rehabilitated European industry creates new markets for the United States.

Much of the present pessimism is due to the shock following wishful thinking that the export volume of the first half of 1947 could be maintained indefinitely. Experienced and qualified businessmen in the export field look for a sustained export volume of about ten billions. That figure is approximately double the pre-war years and it *can* be sustained if we will get the trade balance closer to reality by purchasing imports.

There will be no novelty for purchasing agents in this idea. All other things being equal, we have practised reciprocal buying for years.

In order to appraise the full implications of the simple maxim that we must buy if we would sell, it is perhaps desirable to examine briefly the present position of the United States in world economic affairs, and to compare it, as far as comparison is possible, with our position a few decades ago.

Within a short life-time, the United States has changed from a borrowing to a lending nation. In the late 19th and early 20th Centuries, we built our railroads, our steamships, and many of our basic industries, with money borrowed from the far corners of Europe. We were a debtor nation. Our creditors were willing, even anxious, to take our cotton, wheat, tobacco, and sundry products in payment for interest and debt reduction. We had a tariff to discourage our own people buying too much from abroad. As a debtor nation it was prudent to economize, and sound sense to attempt to sell more than we bought in order to get the finances to redeem our debts.

After World War I we changed suddenly and dramatically from a debtor to a creditor nation. We were at an economic cross-road. History provides the answer as to whether or not we took the right turning. One thing did become clear. The biggest and richest capitalist nation in the world was also capable of an almost crushing depression. In the matter of international trade we had inherited an export-surplus tradition—a so-called "favorable trade balance" policy. We pushed our export trade to the limit and financed it with private loans. The foreign countries got the goods, the bankers got the commissions, business and labor were apparently prosperous, until the bond buyers woke up and there were no more bond customers. Then came 1929. We learned the rather bitter lesson that no nation can successfully export its own unemployment to its foreign trading neighbors.

Great Britain, under somewhat similar circumstances more than a century earlier, seemed to have met the tremendous responsibilities of a creditor nation. She had emerged from the Napoleonic wars with her industries prodigiously expanded and intact. Her merchant and naval fleets controlled the world's maritime trade. She became the banker of the world. She realistically took stock of her own insular position and faced the fact that she must import if she would export—she must buy if she would sell.

Frankly there are important elements of over-simplification in this analogy, but the similarity of the two positions warrants brief examination.

Even if we had possessed the necessary experience in world economic leadership immediately after

World War I, it is doubtful if the temper of the nation would have supported a policy as direct and vigorous as Great Britain's a century earlier. The tradition of the United States would have suggested an unyielding opposition to the "foreign entanglements" necessary for the full exploitation of our advantage. Our changed position from a debtor to a creditor nation was too sudden and novel, and we were unprepared for it.

Now, after another World War, we are again at the economic crossroads. Which turning shall we take? The Marshall Plan provides a pretty definite clue to our present government's thinking; but the Marshall plan or any other plan can be fully effective only if international trade restrictions and stringent exchange controls are multi-laterally liquidated in the course of the next few years.

Today another world opportunity beckons. Our productive capacity has increased by over 50% and exceeds that of all other nations. Our fleets are now the largest in the world. We have three-fifths of the world's stock of prime gold. We are the world's bankers. But in appraising the opportunity for world leadership we must courageously face the conflicting opinions of our own people. There seem to be two attitudes: one considers international trade as a vital contribution to our national prosperity and full employment; the other, that international trade is a necessary evil that must be conducted gingerly and with multiple governmental safe-guards and extreme caution. The first attitude believes that an expanding foreign trade will insure and increase our own prosperity and lift the living standards of the world. The second considers that our domestic economy may be jeopardized and our own living standards lowered by ruthless foreign competition. The second attitude seems to echo uncomfortably the main theme of the political speeches of the exponents of the highest possible tariff.

It is somewhat difficult to bring these conflicting attitudes into some sort of focus. There seems to be no real objection to exports, surplus or otherwise. It is the idea of sizable imports that arouses fierce opposition. There are many influential people in this country—now the greatest creditor nation in the world—who believe that our economy faces ruination unless our debtors go on, year after year, buying more and more American exports than they can possibly pay for. At the same time these same people are violently protesting against throwing good money after bad by making large foreign loans and gifts.

One of the greatest impediments to clear thinking in world-trade terms is the fictitious resemblance between personal business and national business. The Main Street merchant does not have to pay out as much as he takes in; if he does so for any extended period his business fails. If he sells more than he buys, and husbands the difference in dollars, he is a business success. The difference between the Main Street merchant on a small scale and the Nation on a large scale is that the customers of the Main Street merchant can get their dollars in many more ways than by merely selling something to that particular merchant. But when American industry sells locomotives to the French railroads, what can the French operators use for money? Nothing but dollars will settle the bill, and at the present time the only place to get American dollars is in the United States. The French must get the dollars by selling something to some other Americans—champagne, or women's gowns, or perfume, or what have you—or by borrowing or gift.

Actually the free and sensible nations of the trading world are not asking that *all* the goods, materials products, equipment or services they may sell us must be neatly and precisely balanced by the dollar value of what we sell them; but rather that they may sell us *sufficient* to get enough dollars for them to pay us interest and installments on their debt. That was the kind of trade balance we had with them when *we* were the debtors and *they* were the creditors.

For the purposes of the present study we must necessarily forego any extended discussion of economy-trading, i.e., buying in the cheapest market what could be made here at higher cost, and selling the goods and products we can made most economically. However, we should seriously consider the trade for necessary basic materials. Let's take cotton as a sample:

England needs cotton. The United States needs rubber and tin. Selling our cotton and buying their rubber and tin is the kind of trading that makes work and jobs and balances the respective economies in the sense that whole industries will shut down if the supplies are stopped. England gets dollars for rubber and tin, and with those dollars pays some of the debt for the cotton she buys from us. The same balanced-trade possibilities obtain in so-called luxury goods. We trade our wheat and cotton, finished products, and capital goods for imports of British woolens, French champagne, or Italian crafts; the total consumer spending is increased, and the added volume of business increases employment for both parties.

This kind of balanced trade will make it possible for foreign nations to obtain increasing amounts of American dollars with which to pay for a larger volume of goods imported from the United States. By importing more, the United States will be enabled to export more and be paid for the exports.

It is the responsibility of American industry to tackle the problem. Large scale and long term government loans are but inefficient expedients in this business. International debts contracted between governments on a large scale have a common pattern of repudiation. Repudiation is degrading and sets in motion a chain reaction of unpleasant and frequently dangerous repercussions. It is the acute fear of dollar scarcity that accounts for most of the restrictive practices now enforced by foreign countries. Some purely emergency government loans may be necessary; but to put world economic recovery on a firm base, we shall have to buy the world's goods with dollars so that others may pay us for the goods they get from us.

If we persist in pushing our exports without some balanced buying of imports, we shall have to face the stern fact that we are likely to be shut out of world markets by preference agreements under which our debtors will trade with one another to economize their dollars. We *can* achieve an adequate trade balance by our own action. If we increase our imports, we shall be able to have steadily expanding markets and payment for our goods. The value to our national economy under this operation need hardly be emphasized.

The changed status of the British Empire—dynamically dramatized, first in Greece and Turkey and the Levant, later in India, and still later in Western Europe and her own islands—invests the United States with the mantle of world economic leadership. It is specious to say that we never wanted it. We had no choice! American leadership is essential if any program of

(*Please turn to page* 324)

PROCUREMENT AND MATERIALS CONTROL

(Left to right) **Paul Breting, Material Control Manager; F. C. Richardson, Director of Purchases; Lowell Hambric, Purchasing Agent.**

Purchase schedules at U. S. Spring & Bumper Company are based on monthly analysis of requirements and accurate control records covering major materials

• ***By Fred M. Burt***

THE United States Spring & Bumper Company of Los Angeles, formed in 1928 through a combination of the United States Spring Company (1917) and the United States Bumper Company (1923), all headed by John B. Rauen, President, is a pioneer organization for the mass production of parts on the West Coast to compete successfully with eastern manufacturers in supplying the western assembly divisions of major industries. Since its operations must be closely coordinated with the manufacturing schedules of the automotive industry, with specified delivery dates to be met on every order, there is a real problem of scheduling and control of procurement and materials.

Just how successfully the company has met these problems may be judged by the fact that it was cited for particular commendation by A. J. Browning, Vice President and Director of Purchases for the Ford Motor Company, in a talk before 1,300 California factory executives at the inception of Ford's mammoth "parts buying program" for the West Coast about a year ago.

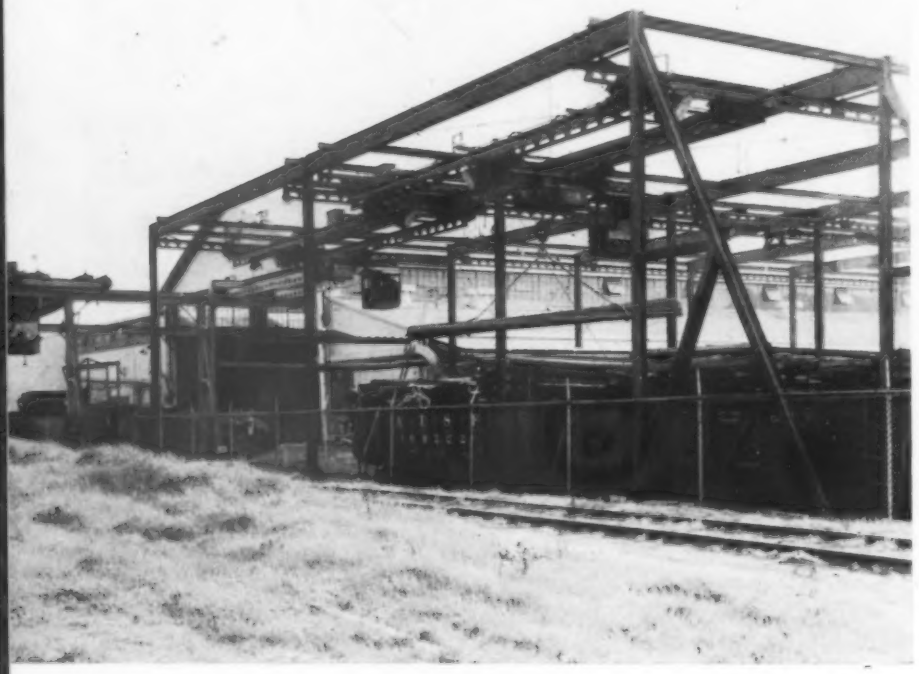
"The United States Spring & Bumper Company, headed by John B. Rauen, pioneered the way for West Coast manufacturers in supplying parts to the automobile industry," Mr. Browning declared. "They have been supplying springs and bumpers to the Ford Motor Company since 1929." The company was also held up as a good example for other West Coast industrialists in their manner of prompt handling of orders down through the years. Thus the present standard of procurement and materials control is nothing new, though much more intricate and exacting today due to the wider range of products and more difficult because many materials are still in short supply.

Besides supplying springs and bumpers for Ford and Mercury passenger cars, trucks and commercial cars, large quantities are also made for the West Coast plants of

Buick, Pontiac, Chevrolet, Chrysler, Dodge, Plymouth, and Studebaker cars; also for trucks and tractors including Kenworth and Peterbilt; and for Fruehauf and other trailers. A newer unit, the Farm Tool Division, likewise uses large tonnages of spring steel for the manufacture of the Silver Line of cultivators, sweeps, shares, shapes, and furrowers.

For an uninterrupted supply of materials to enable the production of some 3,000 tons of finished products each month, a stock of more than 13,000 tons of spring steel is kept constantly on hand, in about a dozen different metallurgical specifications and 150 sizes. The steel purchases, along with stockroom and other plant supplies, and production materials such as parts, nuts, bolts, bushings, quenching oils, acid, plating supplies buffing, polishing, grinding, painting and other materials, plus other miscellaneous purchase requirements, adds up close to seven million dollars annually. About 700 purchase orders are issued each month, chiefly initiated by about 30 requisitions per day. These figures are more significant in relation to the number of the personnel engaged in the purchasing work.

Receiving shipment of steel for the Bumper Division.



Outdoor storage yard for in-process springs.

F. C. Richardson, who has been with the company since 1925, is Secretary and Director of Purchases. In the realm of procurement, he concerns himself chiefly with the large purchases of steel and other major items. Lowell Hambric is Purchasing Agent, and Paul Breting is Manager of Material Control, with Charles Steffen as assistant. Four secretarial and office assistants complete the departmental roster—a total of eight persons to handle this very sizable responsibility.

Materials Control has the responsibility of keeping track of all production materials and making up the requisitions that initiate the purchases. This operation starts with summaries from sales schedules, from which materials requirements are calculated. A Master Authorization for each project provides the basis for preparing a Master Schedule analyzing the customers' orders. Dittoed forms are made up listing in detail all of the requirements for each authorized project as, for example, Chevrolet Springs, shown in the illustration. A purchase schedule is made up on these forms by the middle of each month, to be ready for the placement of purchase orders by the 15th of the month.

With all of the different springs listed by description, size, part number, and weight per part, and then with the insertion of the number of pieces required as dictated by customers' orders, it is a simple matter to calculate the tonnage of spring steel required for each item and to obtain a grand total of tonnage for each size.

All of the steels used for springs and bumpers are manufactured to customers' specifications, and similar standards have been set by the company on their requirements of farm tool steels. Therefore most of the steel used must be produced by the steel companies to a particular specification after the receipt of orders. The time table is figured back from the delivery requirement, and runs about as follows: Springs and bumpers to be delivered to a customer in August are manufactured no later than in July. The total stock needed to meet these requirements in full must be ordered in April, so that the steel company can

U. S. SPRING & BUMPER COMPANY

MASTER SCHEDULE

DATE _____
ISSUE NO _____
PAGE NO _____

PROJECT _____ MASTER AUTHORIZATION NO _____

PART NUMBER	TOTAL ON ORDER	YEAR / MONTH / REQ DATE									
		QUAN.									
		CUMUL.									
		QUAN.									
		CUMUL.									

Master schedule and detailed analysis of sales orders. The purchasing schedule is calculated monthly on the basis of this information.

CHEVROLET SPRINGS M.A. _____ SCHEDULE _____

Description	Size	Part Number	Weight Each	Pieces Required	Tonnage Required	Grand Total						
Fr 1/2 T	Comm 1-3/4 x .194	599316	6.41									
Rr Sedan	Pass 1-3/4 x .214	3657464	6.87									
Rr Coupe	" " "	3657967	5.02									
Fr 3/4T	Comm " "	3656610	8.84									
Fr	" " "	3683405	4.72									
Fr 1/2T	Comm 1-3/4 x .237	599316	12.87									
Rr Sedab	Pass " "	3657464	20.21									
Rr Coupe	" " "	3657967	19.76									
Fr 3/4 T	Comm " "	3656610	9.43									
Sta Wag.	" " "	3662580	21.24									
Sed.Del	Pass " "	3657966	20.47									
Fr	Comm " "	3683405	16.57									
Fr	" " "	3683425	20.16									
Fr 3/4 T	Comm 1-3/4 x.262	3656610	6.22									
Sta Wag.	" " "	3662580	10.21									
Rr	Comm 1-3/4 x .291	3683317	39.74									
Rr 1/2 T	" " "	3659368	40.82									
Fr	" " "	3683425	7.00									
Rr 3/4 T	Comm 2 x .291	3656559	28.27									
Fr 1 T	" " "	3656425	31.05									
Rr 2 T	" " "	3657834	38.79									
Rr 1 T	" " "	3656571	35.24									
Rear	Truck " "	3682298	38.67									
Cab/Eng	" "	3681359	61.48									
Rr 3/4 T	2 x .323	3656559	11.02									
Fr 1 T	" "	3656571	11.02									
Rear	Truck "	3682298	38.67									
Rr 2 T	Truck 2-1/2 x .323	3658251	97.27									
Rr 1½ T	" " "	3658252	66.30									
Sch Bus	" " "	3656733	48.85									
Sch Bus	Truck 2-1/2 x .360	3656733	35.74									

STEEL REQUISITION ON PURCHASING DEPARTMENT

No. _____

Date _____

Please order the following in accordance with specifications shown:

AMOUNT TO ORDER	UNITS	WIDTH	GAUGE	LENGTH	MULTIPLE	TYPE	SYMBOL

REQUISITION ON PURCHASING DEPARTMENT

Requisition No. _____

Date _____

Purchase Order No. _____

Please order the following:

QUANTITY	PART NO.	SIZE AND DESCRIPTION

REQUISITION ON PURCHASING DEPARTMENT

REQ. No 1602

DATE _____

PURCHASE ORDER NO _____

SHIP VIA _____

F.O.B. _____

TERMS _____

QUANTITY	DESCRIPTION	FOR WHAT PURPOSE

APPROVED BY _____ ORDERED BY _____

Three forms of requisition in regular use, covering respectively the requirements of steel, production materials and parts, and miscellaneous supplies.

make and roll the steel in May and June. Therefore a complete analysis is made on these sheets each month, to determine what steel will be requisitioned.

Changes, cancellations, and additions to orders are taken into account. The Grand Total tonnage figure includes all orders on file. In the next column to the right, the tonnage required for the August deliveries (to continue the same example) is entered. In the next column, tonnage received (stock on hand) is noted. From the latter two figures, for entry in the next column, the tonnages to be ordered in April, for June rolling, are calculated. To compensate for the small percentage of losses during the manufacturing process, extra stock is ordered and carried in stores. Thus there is a complete review of the entire steel picture every month.

With a complete physical inventory taken at the end of the fiscal year, August 31st, a perpetual inventory of production materials is kept on Material Control cards. There is one of these cards for each product or size and specification of steel. They provide a complete case history of the purchase, receipt, and use of each item.

Material Control works in close conjunction with Production Control, the two departments being located in the same office. Production orders are made up from Sales Scheduling about the first of each month, to cover the operations of the ensuing month, subject to revisions as indicated to meet order changes. Copies of these production orders go to the Production Department, to Material Control, and to the steel yard supplying this steel. The Production Department goes to the steel yard for the steel when ready to use it, and the steel yard makes a daily Steel Stores Report to Material Control, showing what tonnages should be deducted from the quantities listed on the Material Control cards.

These records are kept on the reverse side of the card. As each production order is issued, the number is entered and the quantity recorded under "Commitments", with the balance entered under "Stock Based on Commitments". When the steel is actually removed from stock, further entries are made under "Disbursements" and "Actual Stock on Hand." This system, and the forms for Material Control, as worked out by Mr. Breting, are simplified down to the absolute essentials, but they fully cover the requirments for positive control.

There are three forms of requisitions in use. One of these is used as the basis for all purchases of steel, with column headings for a complete description or identification of the material needed. A similar form is used for requisitioning all other production materials and parts. The third is a half-size form used for items other than production materials; it originates with department heads and requires approval by Factory Manager J. B. Waskey before going to Mr. Hambric in the Purchasing Department.

This general purpose requisition contains a column headed "For What Purpose". Here the account number against which the purchase is to be charged, is entered. If there is any uncertainty as to the proper account number, the requisition is referred to Controller H. R. Smith for this information. A duplicate copy is kept at the point of origin. Requisitions for stockroom items

Seven automatic polishing and buffing lines keep production moving.

Finished bumpers are delivered to final inspection and packing on these conveyor lines.

Requisition for capital expenditure or special materials and services, with analysis form on the reverse side for consideration and authorization of the project.

UNITED STATES SPRING AND BUMPER CO. | MATERIAL – SERVICE REQUIREMENTS REQUISITION | AUTHORIZATION NUMBER ____ C/M NO. ____

TO BE PREPARED IN DETAIL BY REQUISITIONER				TO BE FILLED IN BY STOREKEEPER		TO BE FILLED IN BY PURCHASING DEPT.			
				QUANTITY		PURCHASE ORDERS ISSUED			
DESCRIPTION	QUANTITY	PRICE	AMOUNT	ON HAND	NET REQUIRED	DATE	P.O. NO.	QUANTITY	VENDOR

UNITED STATES SPRING AND BUMPER CO. | AUTHORIZATION FOR CAPITAL OR MAINTENANCE EXPENDITURE | AUTHORIZATION Nº 1212

DESCRIPTION

DATE

ACCOUNT DISTRIBUTION

C/M NO.	A/C NO.

NECESSITY (ADVANTAGES)

NAME OF FIRMS CONTACTED

SUGGESTED COMPETITIVE FIRMS

	ESTIMATED COST		ACTUAL COST		ACTUAL COST OVER OR (SHORT)	
1	U.S.S.B. CO. LABOR					
2	" BURDEN (60%)					
3	" RAW MATERIALS					
4	" MACH. SHOP SUPPLIES					
5	OUTSIDE PURCHASES					
6	" SERVICES (See Above)					
7	TOTAL					

NOTE: LIST IN DETAIL ON REVERSE SIDE COMPLETE PARTICULARS WITH RESPECT TO ITEMS 3, 4, 5 & 6.

APPROVAL		
SIGNATURES	APPROVED	DISAPPROVED
CHIEF ENGINEER		
CONTROLLER		
GENERAL MANAGER		

REQUESTED BY (SIGNATURE)

FORM NO. A-1

NO. 4

MATERIAL CONTROL

COMMITMENTS								STOCK BASED ON COMMITMENTS		DISBURSEMENTS								ACTUAL STOCK ON HAND	
DATE	PROD. ORDER	REC'R	MILL HEAT	PCS. REC.	PCS. IBS.	WT. REC.	WT. IBS.	NO. OF PCS.	BY WT.	DATE	PROD. ORDER	REC'R	MILL HEAT	PCS. REC.	PCS. IBS.	WT. REC.	WT. IBS.	NO. OF PCS.	BY WT.

MATERIAL CONTROL CARD NO. ____

NAME | PART NO. OR SIZE AND GRADE

WT. PER INCH | WT. PER BAR | MULT. | BAR LENGTH | TYPE | CODE

SPECIFICATIONS

PURCHASE REQ.						PURCHASE ORDERS								NOTICE OF SHIPMENT		
DATE	REQ. NO.	AMT.	P.O. NO.	AMT.	BAL.	DATE	P.O. NO.	REQ. NO.	VENDOR	ROLL	AMT.	DEL'D	BAL.	DATE	AMT.	P.O. NO.

DATE	P.O. NO.	REC'R	NO. OF PCS.	TOTAL PCS.	WEIGHT	TOTAL WEIGHT	DATE	P.O. NO.	REC'R	NO. OF PCS.	TOTAL PCS.	WEIGHT	TOTAL WEIGHT	DATE	P.O. NO.	REC'R	NO. OF PCS.	TOTAL PCS.	WEIGHT	TOTAL WEIGHT

Material Control card (11 x 11) with purchase schedule and record on face of card and perpetual inventory on reverse side.

are made out by the Stock Clerk, and are also approved by Mr. Waskey. After the purchase orders are issued, requisitions are filed in the Purchasing Department in numerical order.

The original and four manifold copies of the purchase order are handled as follows:

1. Original to vendor.
2. Copy to receiving department.
3. Copy to accounting department, where vendors' invoices are received and checked against the purchase order and receiving report prior to payment.
4. Copy for purchasing department numerical file.
5. Purchasing department working copy, kept in the open order file until receiving reports show that the order has been completely filled. Then this copy goes into an alphabetical file, by vendors' names, along with copies of the vendor's invoice, any change notices applying to the order, correspondence, and other pertinent data. At the end of the fiscal year, these records are moved to a transfer file for reference purposes.

In addition to this normal five copy distribution, extra copies of the purchase order are made up, as indicated on certain classifications of material, for the originating department and (in duplicate) for Material Control. Steel purchase orders are made up on a master Ditto sheet, and beyond the normal five copy distribution listed above, two copies are sent to Material Control, one to the steel yard, one to the metallurgical department where steel analyses are checked, and one to the inspection department.

Requisitions for capital expenditures and certain other larger requirements of material or services of a non-recurring nature are subject to special review before authorization to purchase. Such requisitions are worked out in detail on a special "Material-Service Requirements Requisition" form. On the reverse side of one copy is a form of breakdown showing, in addition to the description of the equipment or service requested, a statement of the necessity and advantages, names of firms contacted, names of suggested competitive firms, and a cost estimate taking into consideration company labor, burden, raw materials, and machine shop supplies, outside purchases, and outside services. In a space at the bottom of this form, the chief engineer, controller, and general manager indicate their approval or disapproval of the project. If the purchase is authorized, this form is also used for recording the actual cost; as compared with estimated cost. A record of the purchase orders issued is entered on the face of the form.

The receiving report, made out for each receipt of ordered materials and supplies, is a five-part form, distributed as follows:

1. To Accounts Payable, where it is reconciled with the vendor's invoice.
2. To Material Control, for entry on material control cards showing quantity of production material on hand.
3. To Purchasing Department, where it is checked against purchase order copy in the open order file.
4. To the department where materials are to be received or used, as advice of arrival.
5. Kept in the Receiving Department file.

Partial view of the Farm Tool Division.

Compact plant of the United States Spring and Bumper Company, Los Angeles. Directly back of the office building is the Bumper Division, beyond that the new building housing the Farm Tool Division. Spring Division is at upper right, shipping and receiving in right foreground.

Purchase order, made out with five or more copies, and Change Notice applying to open order.

United States Spring and Bumper Co.
4951 Alcoa Avenue
LOS ANGELES 11, CALIFORNIA

Date
Mail Invoices in Duplicate

PURCHASE ORDER NO.

Purchase Order
CHANGE NOTICE

QUANTITY	ARTICLE	PRICE	DISCOUNT	DISTRIBUTION

ORT. YOU ARE AUTHORIZED HEREBY TO INCREASE OUR ORDER
VANTAGE OF FREIGHT CHARGES OR ALLOWANCES.

United States Spring and Bumper Co.
PURCHASING AGENT

Mail Invoice in Triplicate to
Box 2475, Terminal Annex
Los Angeles 54, California

PURCHASE ORDER
United States Spring & Bumper Co.
4951 Alcoa Avenue
Los Angeles, California

Nº 1477

Date

REQUISITION NO.
SHIPPING DATE
SHIP VIA
F. O. B.
TERMS

QUANTITY	DESCRIPTION	PRICE	DISCOUNT	DISTRIBUTION

Taxable ☐ Resale ☐ Permit No. X882

DO NOT SHIP LESS THAN 100 POUNDS BY FREIGHT. YOU ARE AUTHORIZED HEREBY TO INCREASE OUR ORDER TO ARRIVE AT MINIMUM WEIGHTS TO TAKE ADVANTAGE OF FREIGHT CHARGES OR ALLOWANCES.

UNITED STATES SPRING & BUMPER CO.

PURCHASING AGENT

RECEIVING DEPT. (A-2)
DEPT. RECEIVING MATERIALS
PURCHASING DEPT.
MATERIAL CONTROL
ACCOUNTS PAYABLE COPY

RECEIVING REPORT

UNITED STATES SPRING & BUMPER CO.

Los Angeles _____ 19__

Vendor's Name _____ 05093

Address _____

CAR NO. & INITIALS	SEAL NOS. & CONDITION OF SEALS	CARRIERS PRO. NO.	OUR P. O. NO.

VIA: FREIGHT (RAIL OR TRUCK) ☐ EXPRESS ☐ PARCEL POST ☐ CUSTOMER'S TRUCK ☐ OUR TRUCK ☐ DRIVER'S NAME _____ VENDOR'S SHIPPER OR INVOICE NO.

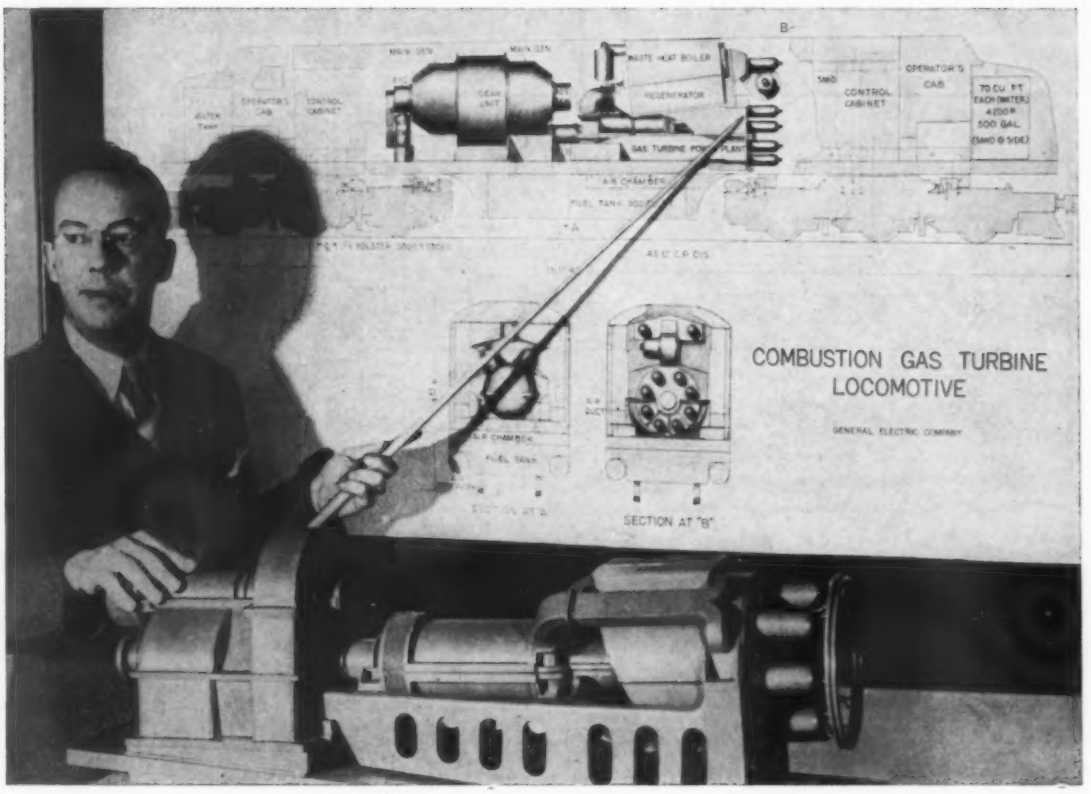
NUMBER OF PACKAGES OR PIECES	KIND OF PACKAGES	SIZE, DESCRIPTION, BRAND, GRADE, ETC.	WEIGHT	

WHERE SENT | INSPECTED BY | RECEIVED BY

Receiving Report, made out with five copies for distribution as indicated in heading.

GAS TURBINE POWER PLANTS

● ***By Donald Frederick***



Gas turbine development by General Electric Company. Phantom drawing shows 4500 hp. unit installed in locomotive with over-all length of only 75 feet and total weight of 180 tons. Model in foreground is for 3000 hp. unit for marine use.

GAS turbine science is old, but it is only in recent years that gas turbine power plants have become commercially feasible. Strictly speaking, the gas turbine does not operate on a gas—but on highly heated air—very large quantities of it.

The forerunner of present day gas turbines was the turbo-supercharger which was developed between the two World Wars. The supercharger, a kind of dog-chasing-its-tail, was developed to use the high temperature exhaust gases from internal combustion engines such as Diesels or gasoline engines, particularly aircraft engines. The turbo-supercharger, in its elementary form, uses exhaust gases for fuel, and is coupled to a compressor which supplies clean air for the motors or motor; in this manner horsepower used to draw in air for the internal combustion engine is released for motive power—or shaft horsepower. In the case of aircraft the supercharger permits high altitude flying where the power required to supply combustion air becomes enormous because of the low weight per volume of air at great heights above sea level.

Commercial gas turbines became possible when a highly efficient compressor, of large capacity, was developed in Sweden. Prior to this, existing compressors were so inefficient that all of the output of the prime mover was used up in compressing its own air. At the present time, several types of compressors are available which operate at reasonable efficiencies. As matters now stand, present designs of gas turbines will provide about 4000 useful horsepower from a gross output of about 12,000 horsepower; the compressors take practically all of the other 8000, with some of the gross going for other auxiliaries.

The first successful gas turbine of any consequence was used in Europe, prior to World War II, in connection with a special type of power plant. Further development work in Europe has produced a number of gas turbine plants which have been quite satisfactory.

Essentially a gas turbine power plant consists of a combustion chamber (in the case of liquid fuels) in which fuel is burned to heat air which is compressed to a pressure of about 50 to 60 lbs. The temperature of the air leaving the combustion chamber may be around 1300 to 1500 degrees F. The highly heated air passes through the turbine blades at high velocity, the heat energy providing the flow. The turbine itself is similar in some respects to a steam turbine, but must be constructed of high grade alloys to resist the high temperature of the heated air.

Connected to the gas turbine is the compressor which must provide the high pressure air for the turbine. The turbine itself exhausts air at around 600 to 700 degrees F, and this exhaust is passed through a heat exchanger which gives up its heat to the fresh air which flows

from the compressor to the combustion chamber. Attached to the shaft of the turbine is an electric generator, connected in the conventional manner, which supplies the useful power for whatever use desired.

Advantages and Limitations

The development of gas turbine power plants is still in the elementary stages, and at the present time the application of such plants will be limited to installations where considerations of weight and space outweigh dollars and cents considerations. One other type of installation is profitable at this time, and that is where by-product gases, that would be otherwise unusable, may be used for fuel. During the War certain synthetic rubber plants made use of gas turbines for this reason, and with considerable economy.

Gas turbine plants use no water in the sense that a steam plant does. Boilers are not involved and there is nothing to condense and consequently there is considerable space saved that would normally be used for water storage and handling. The space economy and the fact that water is not required make the gas turbine power plant attractive for certain propulsions such as ships and locomotives. Also where cost considerations such as by-products, etc., show gas turbines to be economical, industrial uses will be found for such plants.

At the stage of development that has been reached at this time it is most unlikely that gas turbines will be used for automobiles, buses, trucks, and aircraft; other forms of power are more attractive for these machines for a variety of reasons. In spite of the fact that gas turbines have a low weight-to-horsepower ratio, gasoline motors are much better in this respect. One of the outstanding advantages of the gas turbine is the low grade of fuel it is capable of using.

Low Grade Fuels

Gas turbines are now running successfully on heavy oil such as the bunker grades and distillates. The ultimate fuel for the gas turbine power plant is coal, and experiments with this fuel are being carried out now.

In the case of an oil-burning gas turbine plant the fuel handling is simple. Such auxiliaries as pumps, heaters and controls are the bulk of the equipment required. In the case of the coal-burning gas turbine, the fuel handling and burning becomes a considerable process. But for coal burning there are many advantages to be gained. Resources of low-grade coal are tremendous while the known resources of oil are limited; for this reason millions of dollars are now being spent to develop a coal-burning gas turbine for railroad use. Coal at about one-third the price of oil may be used in a gas turbine with the same overall efficiency obtained with oil.

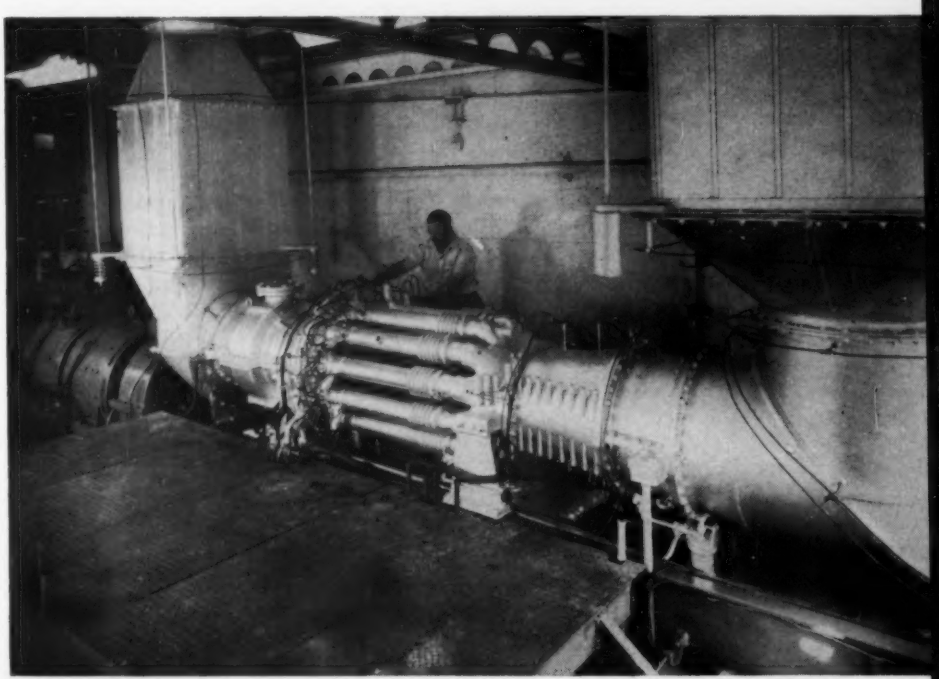
Because the railroads, in many instances, are closely linked with the bituminous coal industry, experiments are now going on which have as their objective the perfection of a locomotive driven by a gas turbine power plant, which will use coal as its fuel.

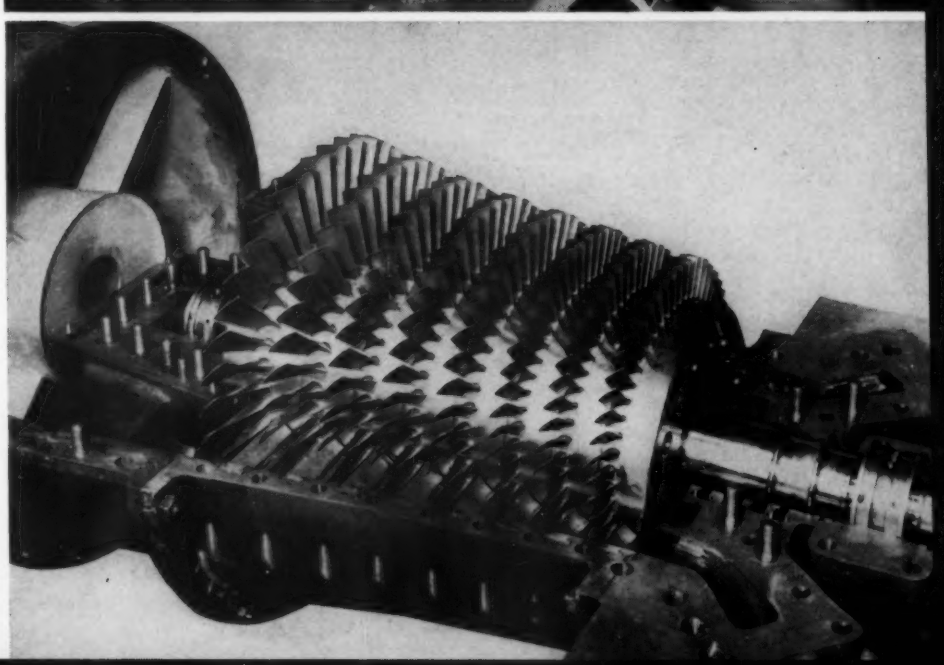
The coal-burning gas turbine plant will use any kind of bituminous coal from dust to lump, varying in ash, moisture, and heat content over wide ranges. But certain equipment is necessary to prepare the coal for combustion.

Coal Preparation

Coal for the gas turbine must be finely pulverized. For the locomotive being developed, the pulverizer is of the "atomizer" type in that

Gas turbine development by Westinghouse Electric Corporation, in test installation. From left to right are the exhaust diffuser and elbow, gas turbine (2000 hp.), combustors, compressor, single reduction gear, and double armature d.c. generator. Sectional view shows turbine rotor assembled in lower half of cylinder; eight stages of cobalt-chromium-tungsten alloy blades are employed.





finely ground coal is "exploded" into talcum powder consistency under the influence of pressure. In the oil-burning gas turbine the fuel is fluid and may be picked up by a pump and sprayed in the furnace under high pressure and be burned without leaving abrasive ash in the air stream.

Cheap coal is desired for the turbine to keep costs down; therefore coals of all sizes and quality will be used. Equipment must be provided to break down any large lumps so that they can be conveyed through the dryer, the dryer being necessary because later the coal must flow in an air stream and flow freely without clogging. After initial breakdown the coal must be ground to coffee-grinder fineness so that it can pass through the "atomizer". After it is dried and ground it must be "pressurized" or put under about 150 lbs. pressure. The pressure is necessary because in making the pulverized coal the "atomizer" uses about 90 lbs. air pressure. The pulverized fuel must then be burned in a "combustor" under 60 lbs., which is the pressure of the highly heated air going to the turbine.

The initial breakdown of the coal is accomplished by a conveyor screw of large diameter, usually of steel which may or may not be hardened; the conveyor screw passes the coal through a stationary crusher which reduces the coal to not over two-inch lumps. The coal is then fed through a special drying screw and drying chamber which uses exhaust gas from the turbine as a drying agent. After drying, the coal is fed through a rotating crusher, passing over a permanent magnet which extracts any foreign material such as pieces of iron which would damage the crusher. The rotating crusher grinds the coal to small particles not over one-sixteenth of an inch in diameter, and on leaving the crusher the coal is picked up by a low-pressure air stream and conveyed to a hopper. From the hopper the coal falls by gravity to a "coal pump" which is one of the keys to the operation. A coal pump is an ingenious piece of apparatus which takes coal at zero pressure and deposits it in a receiver of elevated pressure up to one to two hundred pounds to meet requirements.

The power output of a gas turbine is regulated by its fuel supply similar to automobile operation. With the coal-burning gas turbine this regulation must be centered around the feed from the pressure chamber where the coal is delivered by the coal pump. When demand occurs, the controls must feed coal through the pulverizer, which is instantaneous in operation.

Ash Disposal

In the combustor the coal burns in a confined space and consequently the heat released per cubic foot of furnace must be in the order of millions of BTU. But as happens in any other furnace, ash is produced when the coal is burned.

Ash disposal has been one of the important developments in connection with the coal-fired turbine. At the extremely high velocities common in gas turbine practice, even the smallest solid particles soon wear away the blades, and it is consequently important that no particles of any size be carried with the gas flow into the turbine. Wartime work in the field of dust collection has provided an answer to the ash problem. Planes operating in desert country were equipped with special "cyclone" separators which removed abrasive sand from air intake lines with high efficiency. These cyclones are now being used to collect ash particles for coal-burning gas turbine plants.

Current Developments

Several major projects in the gas turbine field are now under way. Westinghouse, General Electric, Allis-Chalmers, American Locomotive Co., Baldwin Works, and The Elliott Company are some of the larger companies actively engaged in gas turbine developments. The larger portion of the development work being done is in the locomotive field. At present, four locomotives are in the initial stages—two of which will burn coal and two of which will burn oil. A specific design is under way for the Santa Fe railroad; the locomotive will be equipped with Elliott turbines and will be built by the Baldwin Locomotive Works.

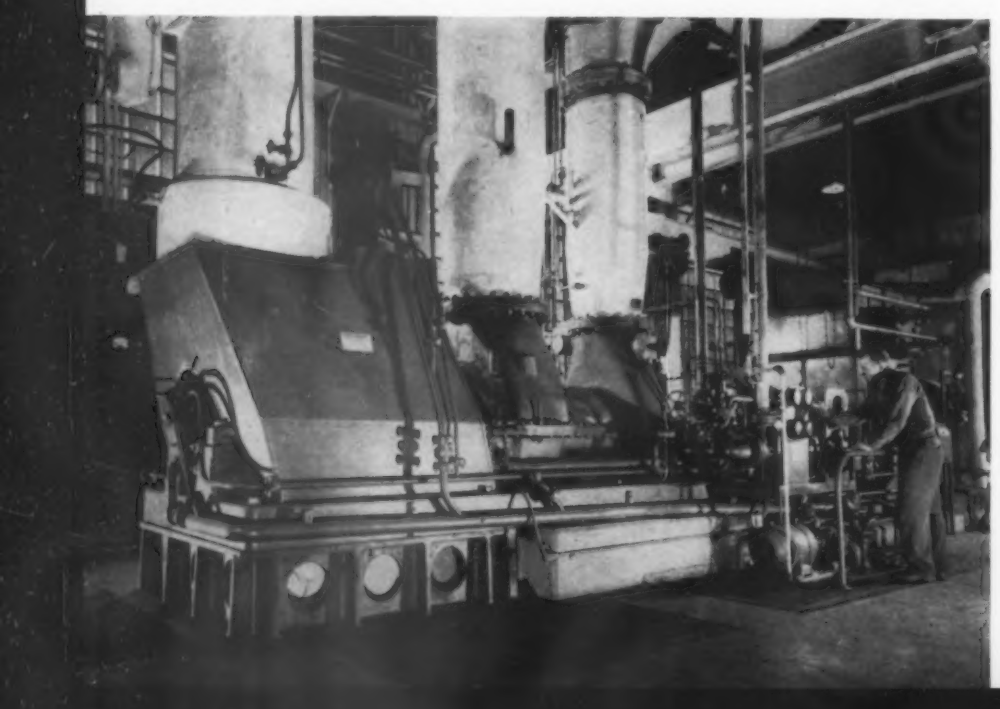
When gas turbines get out of the experimental stages the railroads will offer the biggest field. Gas turbine locomotives will be simply constructed and will operate at low cost and high availablility. A big market for low grade coals will be opened up, and many of the present motive power problems on railroads will be solved. Ship propulsion will offer the best applications for the oil-burning type.

Advancement in metallurgy is required before the efficiencies of gas turbines can be increased. Efficiencies at which the plants can operate are dependent on the temperatures at which the gases may be passed through the turbines.

High grade alloys must be used for all portions of the plants which come in contact with the gases such as the combustor, preheater, turbine, and ash collecting system. Materials which will stand abrasion from coal and ash will be in high demand.

While the locomotives that are now in the initial stages will use electric drives common to Diesel-Electric engines, the gas turbine locomotive of the future will be mechanically driven direct from the turbines.

Gas turbine development by Allis-Chalmers Manufacturing Company. This 10,255 hp. installation of two units is in operation at an Ohio high-octane gasoline plant.



PRODUCT DELIVERY INFORMATION

GRADUAL filling of pipelines on many products is evidenced by "stock" or "immediate" delivery time reported for many products. Such items are eliminated as they are so reported by manufacturers. It will be noted that the delivery time on fractional h-p motors has dropped to 1 to 5 months. Though 10 to 30 days' delivery time is indicated for new cotton and burlap bags, the manufacturer so reporting states that prompt delivery can be made on second hand bags of cotton, burlap, jute and once-used multiwall paper bags.

The delivery time figures shown usually represent the range of delivery reported by several manufacturers.

DELIVERY TIME	
Standard Products	**Special Order**
ABRASIVES, COATED	
1 to 3 weeks	3 to 4 weeks
ADHESIVES	
Industrial Adhesive Tape	
2 to 6 weeks	6 to 8 weeks
Elec. Cloth Adhesive Tape	
2 to 6 weeks	6 to 8 weeks
AIR EQUIPMENT	
Compressors	
2 to 6 months	2 months
Pumps, Vacuum	
2 weeks	2 months
ALUMINUM	
Sheet & Coil Products	
12 weeks	12 weeks
Extrusions	
4 to 5 weeks	6 weeks
Rod and Bar	
2 to 4 weeks	3 to 5 weeks
BEARINGS	
Steel Balls	
1 to 3 months	3 to 6 months
Retainers	
2 to 4 months	4 to 6 months
Bearings	
2 to 4 months	4 to 8 months
Balls, Non-Ferrous	
1 to 3 months	3 to 6 months
Bearings, Roller	
3 to 4 months	4 to 5 months
BELTING	
White Solid Woven Cotton	
Stock — 2 weeks	1 to 3 months
Canvas Stitched	
Stock — 4 weeks	1 to 2 months
Balata	
Stock — 2 weeks	4 to 6 weeks
BRASS & COPPER MILL PRODUCTS	
Brass Strip (Gauges over .016)	
3 weeks	— —
Brass Sheet, under 12"	
3 weeks	— —
Brass Sheet, over 12"	
5 to 7 weeks	— —
Brass Rod Special	
— —	3 weeks
Brass Wire	
3 weeks	— —
Seamless Copper Tube	
3 to 5 weeks	— —
Soft Copper Tube, Coils, under 1"	
8 weeks	— —
Soft Copper Tube, Larger Diameter	
4 weeks	
BRONZE PARTS	
Extruded Bronzes	
2 to 3 weeks	3 to 4 weeks
Light and Heavy Bronze Castings	
2 to 3 weeks	3 to 5 weeks
BRUSHES	
Power Driven	
1 to 3 weeks	4 to 8 weeks
Paint & Varnish Brushes	
1 to 3 weeks	4 to 8 weeks
Wood Handle Wire Scratch, Wire Wheel and Wire Flue and Tube	
1 week	2 weeks
CHAIN	
Steel	
1 to 12 months	1 to 6 months
Malleable Iron Chain	
10 to 30 months	14 to 36 months
Machine Finished Roller	
18 to 24 months	— —
Welded	
1 to 12 months	— —
Weldless	
3 to 12 months	— —
CHEMICALS	
"General shortage of rubber drums, steel drums, and carboys; manufacturers taking on little additional business requiring new containers."	
Carbolic Acid	
Tight: Annual production committed under contract. Shipments restricted to customers' monthly quotas.	
Nitric Acid — Sulphuric Acid	
* * Same	
Formaldehyde	
Vervy short supply.	
Chemical Process Equipment	
12 months	16 months
CLEANERS	
Parts Cleaners	
10 to 15 days	20 days
COATINGS, PROTECTIVE	
3 weeks	5 weeks
COATING EQUIPMENT, INDUSTRIAL	
Baking Ovens	
6 weeks	10 to 24 weeks
Booths, Dry Type Spray; Water Wash	
6 weeks	— —
CONTAINERS	
Bags	
Cellophane	8 to 12 weeks
Glassine	4 weeks
Parchment	12 to 16 weeks
Preprint Wax	4 to 6 weeks
Window	4 to 6 weeks
Bags, Paper	
30 - 60 days	90 - 150 days
Bags, cotton & burlap	
10 to 30 days	30 to 90 days
Boxes, Corrugated	
— —	3 to 4 weeks
Boxes, Solid Fibre	
8 weeks	Spl. orders not accepted
Boxes, Fibre, Cleated	
12 weeks	2 to 5 months
Cleated Plywood, Shook	
8 weeks	6 weeks
Box Shooks	
	6 weeks
Boxes, Crates, Wirebound	
— —	2 to 4 weeks
Boxes, Wooden	
— —	6 to 8 weeks
Crates, Wooden	
— —	3 to 4 months

Standard Products	Special Order
Cooperage, Tight, Slack	
2 to 4 weeks	12 weeks
Fibre Drums	
2 to 3 weeks	— —
ELECTRICAL	
Cables, Wire	
4 to 6 weeks	4 to 6 weeks
Cable, Insulated	
5 to 6 months	5 to 6 months
Cables and Wire	
4 to 6 weeks	4 to 6 weeks
Bare Copper Wire	
3 to 4 weeks	3 to 4 weeks
Weatherproof Wire	
3 to 4 weeks	3 to 4 weeks
Wiring Devices	
3 months	6 to 8 months
Conduits, Flexible	
1 to 5 months	1½ to 6 months
Raceway-Fittings	
60 days	90 days
MOTORS	
Integral Hp Motors, 1 to 5 HP	30 days
Open Gen. Purpose Induction Motors (1-200hp)	
Stock to 3 months	7 to 10 months
Fan-cooled Gen. Purpose Induction (1-25hp)	
Stock to 3 months	6 to 8 months
Open Gen. Purpose d-c Motors and Generators	
Stock to 3 months	6 to 8 months
Fan-cooled or Encl. Non-Vent. d-c Motors	
— —	6 to 8 months
Open Motor Generator Sets	
— —	6 to 8 months
Large a-c Alternators and Synchronous Motors	
— —	8 to 9 months
Fractional hp	
1 to 5 months	2 to 5 months
Motor Control	
75% in stock	40 weeks
ELECTRODES	
3 to 4 weeks	6 to 8 weeks
ENGINES, GASOLINE	
Air-Cooled	
10 months	15 months
Single-cylinder Engines	
6 months	10 months
Four-cylinder Engines	
10 months	15 months
FASTENERS	
Cut Tacks & Nails	
1 month	— —
Small Wire Nails & Brads	
1 to 2 months	
Copper Tacks & Nails	
2 to 3 weeks	
Furniture Nails, Thumb Tacks	
3 to 4 months	
Bolts, 5/8" and under	
3 to 15 months	3 to 6 months
Bolts, Larger	
1 to 6 months	2 months
Bolts, Stove	
6 to 8 months	
Nuts, Self-Locking	
Stock	Semi-Std. 45-60 days Specials 60 to 90 days
Nuts, M/Scs Size	
Stock to 6 months	3 months
Nuts, Bolt Sizes	
Stock to 12 months	3 months
Machine Screw Nuts	
10 to 12 months	12 months
Semi-Finish Nuts	
2 to 3 months	2 to 3 months
Cap Screws	
2 to 30 weeks	3 months
Thread Cutting Screws	
30 to 40 weeks	30 to 40 weeks
Sems Fastener Unit (up to #12 dia.)	
8 to 10 weeks	14 to 16 weeks

Standard Products	Special Order
Sems Fastener Units (¼, 5/16, 3/8")	
30 to 40 weeks	30 to 40 weeks
Machine Screws	
4 months	2 to 9 months
Milled Specials	
— —	2 to 3 months
Headed Specials	
	5 months
Recessed Head Machine Screws	
4 to 6 weeks	3 to 7 months
Recessed Head Wood Screws	
1 to 3 months	3 to 6 months
Sheet Metal Screws	
6 to 8 months	— —
Self Tapping Screws	
1 to 8 months	
Headless Set Screws	
1 to 2 months	— —
Square Head Set Screws	
6 to 7 months	— —
Hollow Head Set Screws	
4 weeks	6 to 8 weeks
Speed Nuts and Speed Clips	
Stock	2 to 6 months
Rivets	
3 to 26 weeks	4 months
Washers, Flat	
Indefinite	— —
Lock Washers	
1 to 2 weeks	4 to 6 weeks
Wood Screws	
1 to 2 months	2 to 6 months
FITTINGS	
Brass, Bronze	
Stock to 12 months	30 to 60 days
Copper or Bronze, Solder Type	
Stock to 60 days	
Tube Fittings, Brass & Steel	
Stock to 1 month	5 weeks
Malleable Iron	
Small quantities 60 days to indefinite Large quantities 9 months to indefinite	
Malleable & Cast Iron Screwed Pipe	
Immediate to 4 months (depending on item)	
Stainless Steel Fittings	
60 to 90 days	90 to 150 days
Steel Tube Fittings	
Stock to 60 days	2 to 4 months
FORGINGS	
— —	Brass or Aluminum 3 to 4 weeks
FURNACE — OVENS	
Electric Heat Treating	
4 to 6 weeks	8 to 12 weeks
Electric Salt Bath	
6 to 8 weeks	10 to 12 weeks
Ovens, Industrial	
4 to 12 weeks	4 to 16 weeks
Furnaces, Industrial	
— —	10 to 32 weeks
GASKETS-PACKINGS	
Leather	
2 weeks	4 weeks
Oil Seals	
2 weeks	12 weeks
Felt Products	
2 to 3 weeks	3 to 4 weeks
Molded Parts	
3 weeks	4 to 6 weeks
Die-Cut	
	3 to 4 weeks
Blackrock Rings	
	5 to 7 weeks
Single Jacket Metal Asbestos	
— —	1 to 12 weeks
Ring Joint Stainless Carbon	
6 weeks	8 to 10 weeks
GAUGES	
2" and 2½" Pressure	
Immediate to 30 days	60 days

Standard Products	Special Order
Oxy-Acetylene; Vacuum; Compound	
30 days	60 days
Recording Gauges & Thermometers	
4 to 6 weeks	6 to 8 weeks
Pressure, Temperature Controls	
4 to 6 weeks	6 to 8 weeks
Recording & Controlling Pyrometers	
4 to 6 weeks	8 to 10 weeks
Linear Measuring Air Gauges	
2 to 4 weeks	2 to 6 weeks
Linear Measuring Electronic Gauges	
Stock to 2 weeks	2 to 4 weeks
Lin. Measuring Dial Ind. Gages	
Stock to 2 weeks	2 to 4 weeks
Lin. Measuring Dial Indicators	
Stock to 2 weeks	2 to 4 weeks
GEARS	
2 to 8 weeks	10 months
According to size and type	
Differentials	
— —	10 months
GRINDERS-BUFFERS	
3 months	6 months
GRINDING WHEELS	
6 weeks	
HEATERS, UNIT	
1 month	— —
HOSE, FLEXIBLE, ASSEMBLIES	
Stock to 2 weeks	30 to 90 days
HOSE	
Fire Hose	
Stock to 3 weeks	Stock to 3 weeks
Hand Hose	
7 weeks	7 weeks
Molded Braided	
Stock to 3 weeks	Stock to 3 weeks
Wrapped Hose	
Stock to 8 weeks	Stock to 8 weeks
Rubber Hose, All Types	
Stock to 30 days	30 days
INSULATION	
Mineral Wool Industrial	
1 to 3 months	— —
LEAD	
Pipe and Sheet	
2 to 3 weeks	4 to 8 weeks
LIGHTING EQUIPMENT	
3 to 5 months	6 to 8 months
Industrial Signals	
20 to 30 days	4 to 5 months
LUMBER	
Crating	
30 to 120 days	
Box Lumber	
30 to 90 days	
Hardwoods (Oak, Gum, Ash)	
Scarce—30 days to 5 months	
Yellow Pine	
1 to 4 months	
Cypress	
1 to 4 months	
Treated Lumber	
1 to 3 months	2 to 4 months
MAGNESIUM	
4 weeks	Sheet — —
MATERIAL HANDLING EQUIPMENT	
Industrial Storage Batteries, Lead acid	
Stock to 4 weeks	6 to 12 weeks
Casters, Truck	
1 to 3 months	2 to 4 months

Standard Products	Special Order
Casters, Semi Steel Plate	
2 to 3 weeks	— —
Casters, Welded Steel Plate	
3 months	2 months
Assembly Conveyors, Belt	
3 weeks	10 weeks
Conveyors, Belt	
6 weeks to 10 months	12 weeks
Conveyor Belting	
Stock to 4 weeks	Stock to 4 weeks
Conveyor Belting, Rubber	
5 to 6 months	5 to 6 months
Conveyors, Coal	
4 to 6 weeks	10 to 12 weeks
Conveyors, Roller Gravity Light, Medium	
2 weeks	6 weeks
Conveyors, Inclined Belt, Stationary, Horizontal	
6 weeks	12 weeks
Elevators, Bucket	
4 to 10 months	5 to 18 months
Elevators, Hand	
1 month	4 to 6 months
Elevator Belting, Rubber	
5 to 6 months	5 to 6 months
Elevators, Portable Hand	
3 weeks	6 weeks
Elevators, Portable, Electric	
3 months	6 months
Elevators, Electric	
2 months	4 to 6 months
Elevators, Portable, Tiering	
1 to 4 months	2 to 7 months
Trucks, Hand, 2 wheel	
4 to 10 weeks	4 to 5 months
Jack & Skid Systems	
4 to 6 weeks	60 to 90 days
Hand Lift Trucks	
Stock to 30 days	30 to 60 days
Stake and Rack	
8 to 10 weeks	4 to 5 months
Skids	
21 days	30 to 60 days
MOTORIZED LIFT TRUCKS	
Stationary Platform	
30 days	60-90 days
Low-lift Platform	
10 to 30 days	30 to 60 days
Low-lift Pallet	
10 to 30 days	30 to 60 days
High-lift Platform	
10 to 30 days	30 to 60 days
Tilting and non-tilting Fork	
10 to 30 days	30 to 60 days
Tractor	
10 days	30 to 60 days
POWER INDUSTRIAL TRUCKS	
Tractors, Gasoline Industrial	
1 to 2 months	2 to 5 months
Tractors, Electric Industrial	
3 months	8 months
Trailers, Factory Warehouse	
8 to 16 weeks	10 to 24 weeks
Platform Trucks (Stake Trucks)	
6 months	10 months
Lift Trucks, Electric (Platform)	
1 to 7 months	8 to 12 months
Fork Truck, 2,000# cap.	
1 month	5 months
Fork Truck, 4,000# cap.	
3 months	8 months
Fork Truck, 6,000# cap.	
6 months	9 months
Low Lift Platform, 6,000# cap.	
4 months	7 months
Fork, 7,000 to 16,000#	
2 to 7 months	10 to 12 months
Baggage Trucks	
7 months	10 months
Crane Trucks	
2 to 7 months	10 months
Dump Truck, Gasoline	
90 days	90 days

Standard Products	Special Order
PIPE	
Pipe, Fabricated	
1 month	Carload, 3 to 4 mo. LCL, 6 to 8 weeks
PIPING	
Exhausts and Blow	
— —	1 to 3 months
Steel, Welded, Riveted	
3 months	Indefinite
Prefabricated Piping	
Indefinite	
PLASTICS	
Molds; begin deliveries	14 to 16 weeks
PUMPS	
Centrifugal	
3 to 15 weeks	8 to 24 weeks
High Vacuum to 200 cf	
2 weeks	3 months
200 cf to 750 cf	
3 months	3 to 6 months
Liquid Pumps, Small	
4 weeks	3 to 4 months
Turbine	
Stock to 4 weeks	6 to 24 weeks
RETAINING RINGS	
Stock to 3 weeks	12 to 14 weeks
RUBBER PRODUCTS	
Coated Fabrics	
2 weeks	6 weeks
Extrusions	
1 week	3 weeks
SCALES	
Platform, Portable	
Stock to 2 months	6 to 12 months
Truck, Wagon	
3 to 6 months	6 to 11 months
Platform Dormant	
4 to 8 months	7 to 10 months
Crane	
4 to 8 months	6 to 12 months
Counting, Portable & Bench	
3 to 5 months	6 to 46 months
Automatic Dial Scales	
3 to 8 months	10 to 14 months
SCREW MACHINE PRODUCTS	
Brass, Aluminum, Steel	
— —	2 to 3 weeks
SPRINGS	
Extension, Compression, Torsion	
2 to 4 weeks	1 to 8 weeks
Spring Stampings	
— —	90 to 150 days
Flat Springs and Small Wire Forms	
6 to 8 weeks	1 week to 4 months
STAMPINGS	
	3 to 4 months
STEEL	
"On a quarterly quota basis"	
STEAM CLEANERS	
1 week	3 to 4 weeks
SPEED REDUCERS	
4 to 6 weeks	10 weeks
SPROCKETS	
4 to 6 weeks	6 to 8 weeks
Cut Tooth Steel	
6 to 12 months	— —
Cut Tooth Cast Iron	
8 to 15 months	— —
TANKS	
1 week	4 weeks
TAPES	
Electric	
Stock to 2 weeks	4 to 6 weeks
Cloth Back	
Stock to 2 weeks	4 to 6 weeks

Standard Products	Special Order
TEXTILE EQUIPMENT	
12 months	18 months
Textile Finishing Equipment	
12 months	16 months
TOOLS	
Twist Drills	
1 to 2 weeks	3 to 4 weeks
Reamers	
1 to 3 weeks	4 to 5 weeks
TRANSMISSION	
Belting	
Stock to 30 days	Stock to 4 weeks
Clutches	
2 weeks	30 days
Sheaves	
3 to 4 weeks	2 months
Steel Pulleys	
8 to 10 weeks	3 months
Friction Clutches	
Stock to 4 months	1 to 4 months
Pillow Blocks, Ball, Roller Bearing	
Stock to 3 months	4 to 5 months
Babbitted	
Stock to 2 months	4 months
Silent Chain Drives	
4 to 6 weeks	8 to 10 weeks
Flexible Couplings	
2 to 4 weeks	4 to 6 weeks
TUBING	
Steel—Monel—Nickel	
2 to 4 weeks	3 to 5 weeks
Aluminum	
4 weeks	— —
Alloy	
4 to 6 weeks	— —
Stainless Seamless and Welded Tubes	
2 months	4 months
Seamless, Hot Finished	
8 months	— —
Seamless, Cold Drawn	
6 months	— —
Boiler Tubes	
3 to 4 months	— —
TUMBLING BARRELS	
1 to 2 months	Indefinite
VALVES	
Bronze, Threaded	
Stock to 60 days	45 to 90 days
Valves, Iron	
Stock to 60 days	2 to 3 months
Valves, Steel	
Stock to 90 days	2 to 3 months
Valves, General	
Stock to 30 days	60 days
Stainless Steel	
2 to 3 months	120 days and up
WIRE	
Stainless Steel Wire	
4 to 6 weeks	5 to 6 months
Carbon Steel Wire	
3 weeks to 5 months	1 to 7 months
Chain Link Fence	
4 to 5 months	
Gas Welding Wire	
5 to 6 months	
Card Wire	
6 to 8 weeks	10 to 12 weeks
Wire Forms	
— —	3 to 4 months
Iron	
20 weeks	— —
Platinum	
10 weeks	— —
WIRE CLOTH	
Copper, Bronze, Aluminum	
10 months	Beyond 10 months
Standard Hardware Cloth	
3 to 4 months	3 to 4 months
Coarse Industrial Cloth	
1 week to 3 mos.	2 weeks to 3 mos.
Fine Industrial Cloth	
1 to 12 weeks — Some immediate	1 week to 3 months

CATALOGING AS AN AID TO STANDARDIZATION IN PURCHASING AND STOREKEEPING

By Elbert Vaughan Wills

Formerly Chief Cataloger, Navy Department Standard Stock Catalog, and Chief, Standards Division, Procurement Division (now Bureau of Federal Supply), U. S. Treasury Department.

THE cataloging system for general supplies represented by the Federal Standard Stock Catalog has rounded out a period of thirty years of practical application as an instrumentality of standardization in purchasing, storekeeping, inventory, issue, and stores accounting. In view of the demonstrated value of the plan, the occasion seems opportune for some effort to indicate its range of possible application beyond the purchasing and storekeeping needs of the agencies of the Federal Government for which it was designed.

The prototype of the Federal Standard Stock Catalog was the Navy Department Standard Stock Catalog, which had its inception in an effort, begun in 1914, to improve the efficiency of operating conditions in the supply departments of Naval Shipyards. In studying the conditions then existing, it was found that diversity of nomenclature used in stock records and in requisitioning papers often occasioned failure to identify items ordered with stock on hand, with consequent delay in filling orders. Incorrect identification sometimes led to the issue of unsuitable or even unusable material. Impracticability of accurate identification by clerks maintaining records of receipts and issues of stock occasioned discrepancies which produced wide variations between records and inventory figures, and rendered issue records a highly fallible guide for those charged with responsibility for the maintenance of stock. It was concluded that an effectual corrective for these conditions could be found only in the development and adoption of a standardized system of cataloging for general supplies.

Basic Principles of the Catalog System

A study of the needs to be met led to the formulation of four basic aims which were adhered to at all stages in the subsequent growth and expansion of the project. These were the following:

(1) To secure the immediate accessibility of each item stored, with ready identification thereof.

(2) To obviate the necessity for antecedent familiarity with the material or supplies handled on the part of the personnel operating the issue system at the routine level.

(3) To facilitate prompt and accurate inventory.

(4) To promote simplification and standardization by making practicable the ready determination of slow-moving items, and indicating possible substitutions.

The realization of these aims involved the development of the distinctive features which have characterized the Catalog throughout its history, i. e., standardized nomenclature, classified, alphabetical arrangement, and a distinguishing number for each item of stock.

The plan of nomenclature standardization which was adopted was based upon the schematization of predicables in Logic which has come down from ancient times under the name of the Tree of Porphyry. The first word of the nomenclature in each case is the noun which names the commodity in the broadest sense. This generic term is followed by modifiers (simple or compound) in the order of their increasing intensiveness, the final term being ordinarily the size, where size is essential to adequate description. The following example illustrates the application of the principle outlined: "Blocks, ordinary, iron, double, single-hook (front, stiff), without-becket, 4-inch."

When standardized nomenclature had been assigned to commodities, the listings were arranged in strictly alphabetical order under the appropriate classes of the storage, issue, and accounting classification which was already in use by the Navy and which was made a part of the Catalog plan. Thus it served to bring together in a single group related commodities, as, for example, all Lumber. This alphabetical arrangement was followed throughout the nomenclature, ending with the numerical arrangement of sizes where specified. A stock number was then assigned to each item. This number was made up of the class number, the initial letter of the generic name of the commodity (the first word of the nomenclature), and a serial number designed to distinguish between individual items.

Publication of the Navy Catalog in loose-leaf form was begun in 1915. By the beginning of American participation in the first World War, the supplies in general use had been cataloged and experience had been gained in the operation of the plan. The first Navy Catalog listed about 30,000 items.

The Catalog in Use

According to the Navy Catalog plan, the pattern of the Catalog was the pattern of storehouse arrangement. Commodities thus stored were arranged in bins or in bulk storage in alphabetical order. Stock tags bore the stock number and nomenclature of each item exactly as they appeared in the Catalog. Stock numbers and nomenclature also appeared on all stock receipt and issue records, and on stock upkeep records used for entering stock replenishment requisitions and indicating the status of outstanding contracts or orders for stock.

The same designation by stock number and nomenclature was used to follow an item of stock through all the stages of purchase, delivery, inspection, storage, and issue. Standardized and unmistakable identification was thus provided on invoices for incoming stores, enabling the receiving storeman to place the new delivery properly in the standard stock arrangement, along with any residue of stock of the same item. Entries on stock upkeep records and records of receipts and issues, being made from the same invoices, were likewise safeguarded against error.

Requisitioning activities, ashore and afloat, preparing their requisitions from the Catalog, used standard stock numbers and nomenclature,

and these appeared on issue invoices, which were prepared from the requisitions after checking against the Catalog. Identification of stock to be issued was thus merely a matter of matching stock numbers and nomenclature appearing on invoices with those of the marking tags on stock. Clerks maintaining records of quantities issued were likewise provided with definite identification. Obviously under such a plan inventory discrepancies might be expected to be reduced to a minimum.

The systematic and thorough review of stock requirements necessitated in connection with the preparation of the Catalog rendered practicable the discontinuance of many stock items which were obsolete or seldom required. The Catalog made available to design and drafting staffs an orderly conspectus of stock regularly carried. This facilitated and encouraged the confining of requirements to stock sizes and types. It also facilitated technical review of the range of stocks maintained and the necessity of additions to meet newly-arising needs.

During the first World War the Navy Catalog was subjected to the test of performance under emergency conditions. It met this test in such a manner as to demonstrate conclusively that it offered a practicable method of coping with what had long been vexatious storage and issue problems. In shore establishments, personnel could be shifted from storehouse to storehouse with fluctuation of work load. Any storeman or store laborer able to read could stow incoming stock or assemble stores to fill ship or shop requisitions, even though unfamiliar with the commodities which he was handling.

Expansion to Interdepartmental Scope

The Navy Catalog was kept current until 1929, when it was merged into the Federal Standard Stock Catalog, an interdepartmental catalog of similar plan and purpose. In March, 1929, there was established under the direction of the Chief Coordinator, Bureau of the Budget, a Federal Standard Stock Catalog Board, to coordinate departmental requirements in connection with the development of a catalog. The Navy catalog staff became the nucleus of the staff which proceeded promptly with the preparation of the Federal Standard Stock Catalog.

By the end of 1931, the initial compilation (mainly from inventory reports, aside from the listings in the Navy Catalog) had been virtually completed and the greater part of the Catalog had been printed in loose-leaf form and distributed to the participating agencies. While the classification for storage and issue was made more comprehensive, the distinctive features of the Navy Catalog just prior to its incorporation into the larger project.

In the arrangement of identifying stock numbers for items in the Navy Catalog, the numerical sequence of the serial portion of the stock numbers did not necessarily coincide with the alphabetical arrangement by nomenclature. It had been made evident by experience that alphabetical numerical arrangement would be of marked value in facilitating storage issue, inventorying, and accounting Accordingly the Federal Standard Stock Catalog was so arranged that under each commodity class the numerical sequence of items by stock numbers coincided with the alphabetical arrangement by nomenclature. It was thus made practicable to locate immediately any item in store, or any record concerning such item, either by stock number or by nomenclature. The Federal Catalog listed approximately 155,000 items.

The U. S. Government Master Specifications, adopted by the Federal Specifications Board, were made, through arrangement with that Board, a distinct section of the Federal Standard Stock Catalog, and were printed in leaflet form as Federal Specifications. They were thus made available for distribution by purchasing officers to prospective bidders and for sale to the public through the office of the Superintendent of Documents, Government Printing Office. These specifications and other portions of the Catalog thus sold are listed by the Superintendent of Documents in Price List 75. In cataloging commodities, the applicable specifications were cited by number or symbol, and the scope of identification of items through their nomenclature was kept in conformity with specification requirements, in order to avoid confusion in purchasing, arising from conflict between nomenclature and specification.

In 1933, the Federal Coordinating Service was abolished and the maintenance of the Federal Standard Stock Catalog was transferred to the newly-organized Procurement Division of the Treasury Department. Somewhat later the Federal Standard Stock Catalog Board was abolished.

The revisions of the Federal

(*Please turn to page 328*)

"Don't worry—with every fan you order we give one of our paperweights."

WHEN YOU BUY USED EQUIPMENT OR MERCHANDISE

● *By Leo T. Parker*

A FEW weeks ago a reader wrote in part, as follows: "Due to scarcity of new machinery, automobiles, equipment and other merchandise, we are purchasing much used or second-hand stuff. What are the important legal differences purchasers should know to avoid law suits when buying used merchandise? We have a law suit on our hands. We contend that the seller is responsible on an implied guarantee on equipment that failed to give us any satisfaction. Can we win this suit?"

Apparently the answer to this question is important to all readers. Therefore, in this article we shall briefly review a number of higher court decisions which illustrate various phases of modern law pertaining to guarantees on used equipment, goods and merchandise.

Loss of Profits

It is elementary law, of course, that a seller may be liable on an implied guarantee if he knows the intended uses to be made by the buyer of used merchandise. This is particularly so if the subject of the sale is not reasonably worth the purchase price, and the seller gave no expressed guarantee. The seller can, however, avoid responsibility on an implied guarantee by proving that he informed the purchaser before the contract was made that he was making the sale "as is" and with no guarantee.

Notwithstanding this usual law, modern higher courts consistently hold that sellers are duty bound to do all things reasonably necessary to prevent or minimize damages likely to be sustained by a purchaser. If the seller negligently fails to do so, the purchaser can recover full damages for such neglect, as a breach of either an expressed or implied guarantee.

For illustration, in Jegen v. Berger, 174 Pac. (2d) 489, reported April, 1947, the testimony showed facts, as follows: A seller sold to a laundry owner a mangle or ironer. The seller guaranteed the mangle for one year, and the contract price was $965.

The laundry owner sued the seller for damages alleging that there were "at least four" "spots" on the mangle cylinder, apparently caused by improper soldering. The spots interfered with efficient ironing of materials placed into the mangle. Also, the frame of the mangle was cracked in two places, and the mangle "fed lopsided," which condition persisted during the entire time the laundry owner used it.

The laundry owner sued the seller and proved that he had been in the laundry business for 11 years, and was experienced in operating mangles. He testified that due to the failure of the mangle to properly operate, he had to "turn business away," and had to send much flatwork out to other laundries. The

purchaser contended that the seller should be compelled to pay all damages, including those based on loss of business profits from his business. The higher court agreed and allowed the laundry owner $4,000 damages saying:

"The laundry owner's . . . testimony that he had to turn business away—coupled with the fact that it was common knowledge that all laundries during the years could get about as much business as they thought they might handle—would give some reasonable basis for his estimate. . . . We cannot say that there is not substantial evidence to support the award of $4,000 damages."

Also, see Natural Company v. L. A., 143 P. (2d) 12, 17, where the Supreme Court said:

"The award of damages for loss of profits depends upon whether there is a satisfactory basis for estimating what the probable earnings would have been had there been no tort."

Implied Guarantee

Hence, it is quite apparent that a seller is liable in full damages for breach of a contract guarantee, whether expressed or implied. Generally, however, suits involving used merchandise, machinery and equipment involve implied guarantees. Therefore, we shall review late and leading higher court decisions, as follows:

In Mass. 177 S. W. (2d) 372, the higher court held a seller liable on an implied guarantee where the testimony showed that the seller had stated to the prospective buyer that the used tractor "is operating satisfactorily". The tractor would not operate satisfactorily to the purchaser and the higher court held the seller liable.

In Hanna, 160 Mo. App. 437, the higher court held a seller liable on an implied guarantee because he had made statements which led the purchaser, who had no opportunity to inspect the machine, to *believe* that it would operate satisfactorily.

For comparison, see Johnson, 187 Ala. 142. Here the higher court held that a purchaser must accept and pay for a used sawmill where the testimony showed that (1) the seller had not expressly guaranteed it; (2) the purchaser had not explained to the seller the intended special uses of the mill; and (3) the purchaser did not realize that it was not suited to his purposes until he tested it.

In Lamb, 51 Cal. App. 433, a purchaser of a used automobile inspected it before he bought it. Later he discovered that it had defects. He sued to compel the seller to take it back, and refund the purchase price. The higher court held that the seller was not liable on an implied guarantee, because the purchaser had tested and inspected the automobile before he purchased it.

For comparison, see Lester, 117 Fed. (2d) 780. Here it was shown that a prospective buyer told a seller that he needed a car "in good running condition". The seller verbally stated that the car "is in good first-class shape." The higher court held that the seller must take back the car which had many defects.

But in White, 9 Tenn. App. 501, the higher court held a seller not liable on an implied guarantee. The testimony proved that he had included in the written contract of sale the statement that "the equipment is being sold as is and subject to no warranty".

In Southern, 112 S. E. 905, a seller made numerous *verbal* statements and guarantees of the good quality of a rebuilt engine. However, in the written contract he included a clause *which he directed* to the attention of the purchaser. This clause stated that the engine must be "accepted in its present condition" by the purchaser. The higher court held that the seller was *not* liable on an implied guarantee, although the engine would not operate satisfactorily without major repairs.

For comparison see Leboe, 296 Ill. App. 622, where the testimony showed facts, as follows: A written contract contained a clause providing that all prior verbal agreements were cancelled and that the written contract consituted the *sole* and complete obligations of the seller.

In this case the court held that notwithstanding this written contract, the seller was liable on an implied guarantee. The court held that the written contract did not embody the complete contract between the buyer and seller because of the seller's previous statements referring to the verbal promises and guarantees.

This court explained that if the seller intended to avoid responsibilities on the verbal guarantees he should have clearly so stated in the written contract.

Duty of Purchaser

Very frequently a seller may avoid responsibility for breach of any part of a sale contract by proving that the purchaser violated the terms of the contract. Hence in order to be certain that a seller shall be liable on a guarantee the purchaser should comply closely with the terms of the contract.

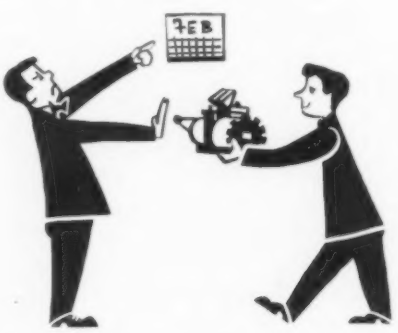
See Jeffrey, 93 Fed. 408. It was disclosed that a purchaser decided to rescind his contract to purchase certain machinery because the seller had failed to make delivery on the date specified in the contract. However, the testimony showed that the purchaser had used the machinery in his business for a day or so after it was delivered to him. Hence, the higher court held that he must keep and pay for it. This court said that the purchaser should have refused to accept delivery of the machinery.

In Hughes, 253 Mich. 386, the testimony showed facts, as follows: A seller guaranteed that a used automobile was in good running condition. A week after accepting delivery of the car the purchaser discovered that it was not the year model represented by the seller. However, the purchaser kept the car for an additional ninety days, although he complained to the seller that he had been defrauded.

The higher court held that the purchaser could not rescind the contract and that the seller was not liable for breach.

And Fox, 113 N. W. 669, the purchaser of a used tractor tested it one day, and discovered that it was faulty and not in accordance with the guarantee given by the seller. The higher court held that the purchaser must keep and pay for the tractor since the testimony proved that he had used it other days after making the test.

Again, in Detroit, 52 Pac. 379, it was shown that a purchaser knew that a machine did not comply with the guarantee given by the seller. However, kept it several days without complaining to the seller while attempting to make mechanical changes so that it would be satisfactory. The higher court held that the purchaser had legally "accepted" the machine and that he could not return it to the seller.



Also, in Empire, 12 N.Y.S. 948, it was shown that a sale contract provided that if a machine was not satisfactory the buyer must return it within 30 days. The buyer kept the machine for 40 days, and then demanded that the seller take it back. The higher court held that the buyer must keep and pay for the defective machine, and that the seller was not liable although the machine did not comply with the guarantee given by the seller.

For comparison, see Hacchese, 257 S. W. 584. Here it was shown that a purchaser tested a used machine, and discovered that it did not comply with the guarantee made by the seller. He immediately rescinded the contract.

In subsequent suit the seller argued that since the purchaser had used the machine in testing it, he could not rescind the contract. However, the higher court held that the purchaser could rescind the contract since he had only made a "test use" of the machine.

False Advertisements

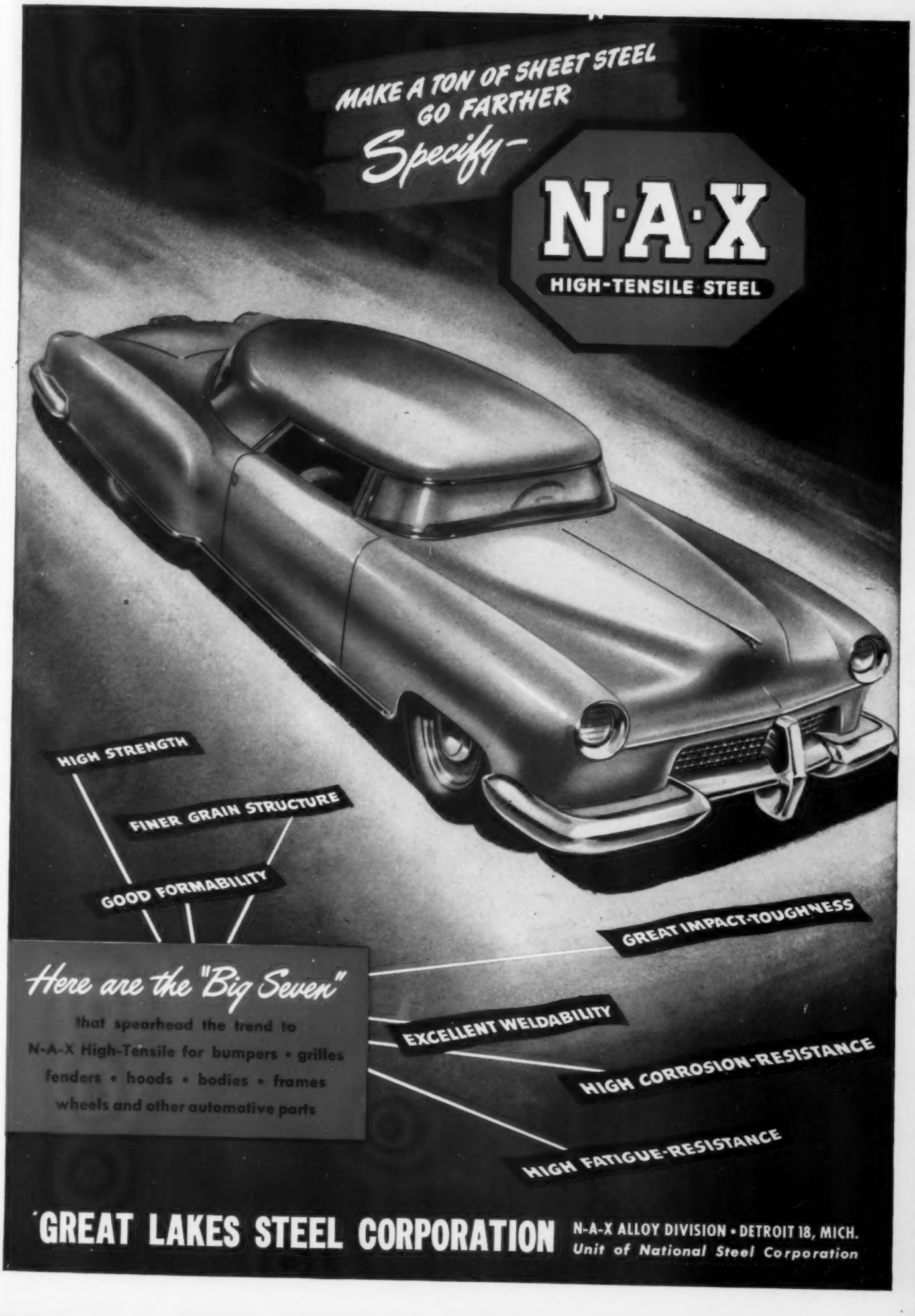
Generally speaking, a seller of used equipment, machinery or merchandise is liable on a guarantee based on advertisements. Obviously, the purchaser must prove that he relied on the advertisement before making the contract, otherwise he cannot hold the seller liable. Moreover, a seller is not liable on a guarantee where he merely "puffs" or "brags" on his merchandise.

In James, 80 Fed. (2d) 1012, it was shown that an advertisement stated that the advertised equipment was "far beyond competitive devices in quality of manufacture".

The court held that this statement is *not* an absolute guarantee but only natural "puffing" of a seller. Other courts have held that a seller is not liable on a guarantee although he advertised that his product is "best in world"; or "better than other competitors' machines"; or "perfectly satisfactory".

For comparison, see Turner, 186 S. W. (2d) 603. In this case the court held a seller liable for $1,000 on a guarantee where he had advertised that ladders were " mighty and durable" and in addition the seller verbally stated that the ladders were guaranteed to hold "200 pounds or more". The ladder broke when the user, who weighed less than 200 pounds, was on it.

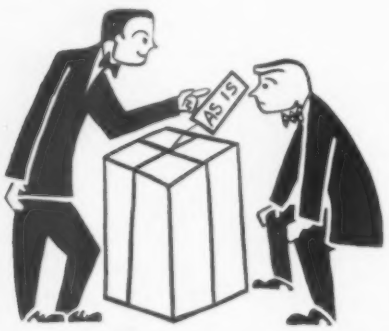
On the other hand, in Atlanta, 8 Fed. (2d) 542, it was shown that a seller advertised used tent poles


MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N·A·X
HIGH-TENSILE STEEL
HIGH STRENGTH
FINER GRAIN STRUCTURE
GOOD FORMABILITY
GREAT IMPACT-TOUGHNESS
EXCELLENT WELDABILITY
HIGH CORROSION-RESISTANCE
HIGH FATIGUE-RESISTANCE
Here are the "Big Seven"
that spearhead the trend to
N-A-X High-Tensile for bumpers • grilles
fenders • hoods • bodies • frames
wheels and other automotive parts
GREAT LAKES STEEL CORPORATION
N-A-X ALLOY DIVISION • DETROIT 18, MICH.
Unit of National Steel Corporation

"as is" A purchaser examined only two perfect poles, but he was privileged to examine the other poles. The higher court held the seller not liable on a guarantee, although the balance of the delivered poles were worthless.

In Charles, 95 Pac. (2d) 173, the higher court held a seller not liable for breach of his guarantee in advertisements. The seller proved that the dissatisfied purchaser did not use the merchandise according to directions on the package. In other words, the court held that it was the seller's own fault that the merchandise had been unsatisfactory.

In Davis, 255 S. W. 655, in advertisements a seller positively guaranteed his product. However, he attached to the merchandise a tag which he showed the purchaser and on which was printed a notice that *no* guarantee of quality was given on the merchandise.



The higher court held that this notice on the tag cancelled the guarantee. But this court also held that the tag would have no effect to cancel the seller's responsibility on the advertised guarantee, if the purchaser proved that he did not read the tag.

Purchaser Is Inconsistent

All higher courts hold that "inconsistency" of a purchaser may obligate him to keep and pay for used equipment, machinery or merchandise which does *not* comply with the terms of a guarantee given by the seller.

For example, in Allison Corporation v. Wilson, 233 N. W. 673, it was shown that a purchaser notified a seller of a used machine that it was *very unsatisfactory* and further that it did not comply with the terms of the guarantee. After giving this notification the purchaser used the machine for six days because he needed it to operate his business.

In subsequent suit the higher court held that the purchaser must keep and pay for the machine because he was "inconsistent". In other words, he could not use the machine after he had notified the seller that it was unsatisfactory although he could not conduct his business. This court said that if the purchaser had not used the machine and the seller had breached his guarantee, he could sue the seller and recover loss of profits he would have earned in his business.

Approval Acceptance

Modern higher courts hold that a purchaser may buy and accept merchandise within a reasonable time, or pay the full contract price. Just what is considered a *reasonable* time depends upon the circumstances.

If the merchandise in litigation has concealed defects not discovered by the purchaser until several months later, he may without liability delay several months in returning the merchandise or paying the account. However, usually a purchaser can immediately determine the quality of used merchandise if he uses good judgment. Therefore, he should return it not later than thirty days after acceptance, otherwise he is liable for payment. All purchasers may avoid law suits of this nature by having sellers sign agreements that unsatisfactory goods may be returned after thirty days, irrespective whether the merchandise is shipped on a valid contract of sale, or on approval, or on consignment.

Statement of Value

Considerable discussion has arisen from time to time over the legal question: When may a purchaser hold a seller liable for false statement of the resale value of used equipment of a seller that used equipment, machinery or merchandise has a named value is not legal fraud.

In Harvey, Yelv. 21, 80 Eng. Reprint 15, the earliest case on record, the higher court held that "it is folly on the part of the buyer to give credit to the assertion of the seller as to how much the property can be resold for".

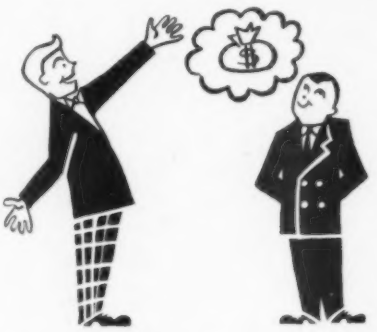
In Stroll, 56 Atl. 895, the higher court held a seller guilty of fraud where the testimony showed that he made a *definite* statement that the purchaser could resell the merchandise for a stated price. In this case the seller did not merely express his opinion of the value of the equipment, but made a *definite* statement or guarantee.

For comparison, see Styler, 107 Or. 48. Here the higher court held a seller not guilty of fraud where he based the resale value of merchandise on what other *dealers* believed it to be worth. This court said that the purchaser could have avoided litigation and vertified the seller's statement by talking with other dealers.

Also, see Crank, 10 Ind. 485, where the higher court said:

"It cannot be said that the market value of a commodity is peculiarly within the knowledge of one more than another, as the channels of information are open equally to all."

Hence where a seller in the course of conversation merely "estimates" the resale value of merchandise the purchaser cannot sue and hold the seller liable in damages.



On the other hand, if a seller *knows* that a prospective purchaser has erroneous ideas as to the quality or value of used equipment, machinery or merchandise such seller is bound to "speak up" to keep the purchaser from being deceived.

Notwithstanding this established law, a seller need not accept or approve an order or contract taken by his agent. In Gould, 41 So. 675, it was shown that a purchaser gave an order to the seller's salesman. The seller did not answer nor approve the order. Several months later the purchaser sued to compel the seller to ship the merchandise fulfill the terms of alleged contract.

Order Not Accepted

The higher court held that no valid contract was made and that the seller could not be liable for failure to deliver the merchandise to the purchaser. This court explained that a seller need not either accept or reject an "offer" submitted by a purchaser to buy equipment, machinery or merchandise.

Also, see Senner, 173 N.Y.S. 265, where the court held that a seller need not notify a purchaser whether or not he approves or accepts a contract taken by his agent, unless the testimony proves conclusively that *it had been the custom in past dealings* for the seller to consider contracts valid taken by his agent.

ALUMINUM
PURDY
KAISER ALUMINUM
A. R. Purdy Co.
PLANET

New PRODUCTS · IDEAS

Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

LOW VOLTAGE RECTIFIERS

LOW voltage, high current rectifiers are for operation from 220 or 440 volts three phase a-c power lines. D-c output voltage can be varied from 0 to 6 volts, with a capacity of 600 amperes, or from 0 to 12 volts with a capacity of 300 amperes. Features include: selenium rectifier elements; heavy duty variable voltage transformer; each unit is complete, and includes large 4½" ammeter and voltmeter and protection against overloads. *Electronic Rectifier Co., Inc., Rochester 2, N. Y.*

COPPER BRIGHT DIPPING SOLUTION

DESCRIBED as a safe solution for bright dipping of copper and copper alloys, Copper-Brite is said to remove oxides, leave metal bright and shiny and to resist future tarnish and discoloration. It is claimed to be non-toxic, non-fuming and safe for the worker to handle. Used at room temperature in acid resistant still tanks, it requires only a dip and clear water rinse. The solution will not discolor silver solder. *Rossaul Co., 119 W. 63rd St., New York 23, N. Y.*

INDUSTRIAL RUBBER WADER

RUBBER used in this industrial wader is said to have maximum abrasion resistance. Wader is made in one pattern with shoe sizes from 8 to 11 inclusive. All seams are cemented and strapped and the crotch seam fully rubber reinforced. Boots have a cleated sole and molded heel. Rubber suspender straps are equipped with quick operating buckles, and a bib front is provided for extra height. *The B. F. Goodrich Co., Akron, O.*

PARKER ANNOUNCES PARCO CLEANERS

PARCO is name of new line of cleaners for steel, zinc, aluminum. It includes emulsion types, acid types, and alkaline types. They are specialized cleaners to meet varying specifications and conditions, and are formulated to make hard water suitable for cleaning, to rapidly remove oil from metal surfaces, to condition them for fine, dense Bonderite coatings, to remove rust and grease prior to painting, and to provide easier control. *Parker Rust Proof Co., Detroit, Mich.*

BRANDING IRON

INTERCHANGEABLE-character branding iron is described as suitable for branding dates on tires and batteries, for numbering seats, telephone poles etc., and any application where interchangeable numerals or letters are required. Individual characters are changeable while hot by the adjustment of a set screw. The brander makes a deep brand on wood, rubber, bakelite, wallboards, etc. Stock sizes for eight or less removable characters, ¼", ⅜" and ½" in height. *Hexacon Electric Co., 117 West Clay Ave., Roselle Park, N. J.*

GAGE FOR CHECKING CENTER HOLES

CENTER Master gage for checking the size of 60° center holes is said to be valuable in machining or grinding work when locating from the center holes where the overall length and the size of the center holes must be held to close limits. It gives the diameter of the center holes by a direct indicator reading, with no set up or calculations involved. The indicator reading always gives the actual diameter of the center hole, it is claimed. Literature available. *Veteran Machine Works, 511 S. Laflin St., Chicago, Ill.*

SOLUTION STIRRING MIXER

SMALL stirring mixer can be used for all fluids such as beverages, disinfectants, oils and chemicals of light consistency for limited capacity. It will handle containers from one quart to five gallons. The mixer has a standard a-c 110-volt motor, and Underwriters' laboratory approved electrical connections. All parts are rust-proofed. *Dayton Rogers Mfg. Co., 2835 12th Ave. South, Minneapolis 7, Minn.*

DRUM AND BARREL DRAIN STAND

DRAIN stand for handling all sizes of drums and barrels allows one man to tilt drum from a vertical position on the floor to a horizontal elevated level for draining. It positions the drum spigot approximately 18" from the floor. It is claimed to prevent injuries, save time and allow complete drainage of liquids. Rigid angle iron construction with electric wheels. It has two wheels and two swivel casters for moving. *Industrial Products Co., 2820 N. Fourth St., Philadelphia 33, Pa.*

LIGHT WEIGHT ENGINE

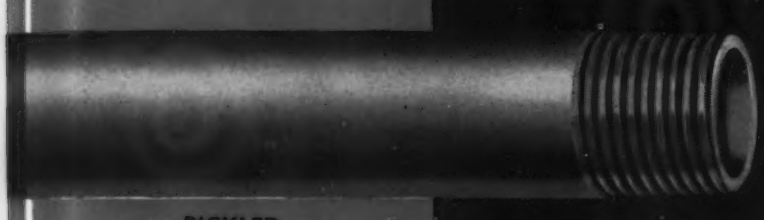
PRECISION-built engine weighs approximately 47 lbs., and comes equipped with various bases for special mounting on different types of equipment. Oil filler is located at top of crank case and drainage can be had from either end, as specified. Compactness of design is said to permit more power with less weight and bulk, and light weight is said to give it wider range of applications. *Clinton Machine Co., Clinton, Mich.*

(*Please turn to page* 152)

6 reasons *Why* NATIONAL ELECTRIC SHERARDUCT CONDUIT *is better!*

RAW PIPE

1. Made of "Spellerized" steel for easy bending and clean-cut threads.
2. Scale-free—inside and out.



PICKLED

3. All rust-forming impurities removed before SHERARDIZING.

SHERARDIZED

4. Zinc alloyed with the steel on all surfaces.

SHERARDIZED THREADS

5. All threads have the same zinc protection as the walls.

PROTECTED AGAINST ACIDS

6. Acid-resisting Shera-Solution baked into the pores for added protection.

PROVED BY THE TEST OF TIME

National Electric Products Corporation
Pittsburgh 30, Pa.

NATIONAL ELECTRIC PRODUCTS
NE
WIRING & SYSTEMS
WIRES AND CABLES

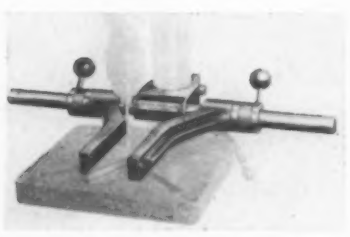
CARBON ARC TORCH

FLEXARC carbon arc torch is for brazing, soldering and supplying heat for light forging, and preheating before welding and temperature operations. Each torch comes complete with two ten-foot extra flexible welding cable leads attached; one pair ¼" x 6" carbon electrodes; and one pair ⅜" x 6" carbon electrodes. Leads are equipped with bayonet attachment plugs to fit the Westinghouse WT Midget Marvel and Limited Input welders. *Westinghouse Electric Corp., P.O. Box 868 Pittsburgh 30, Pa.*

HAND DRILL AND DRILL PRESS ATTACHMENTS

FOUR portable, interchangeable attachments that are said to permit electric hand drill or drill press users to sand, drive screws, polish, grind, file, in addition to sawing wood, steel, plastic and similar materials, with the same power unit are: three-inch disc sander, for any electric hand drill or drill press; saw and file attachment for any electric drill and most types of drill press; saw and file attachment for hand drill only; and screwdriver attachment for any electric hand drill and most drill presses. *J. D. Whittle Co., Small Tools Div., 208 N. Wells St., Chicago 6, Ill.*

SAFETY WORK-HOLDER

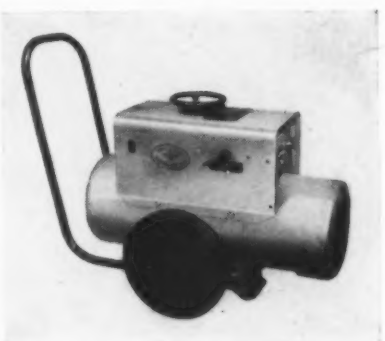


WORK-HOLDER which clamps to the column of any small standard drill press is said to secure the work with only a quarter turn of a single lever. In many cases the tool can substitute for simple drill jigs, maker states. Elimination of bolts, C-clamps etc., enhances safety and increases accuracy, it is claimed. The clamping arms are adjustable and swing back to clear a drill jig or machine vise when necessary. Standard sizes fit drill presses with columns of 1⅝, 2¼, 2¾, 3, 3½, 3¾ or 4-inch diameters. *Universal Vise & Tool Co., Parma, Mich.*

FLAME RESISTANT FLOORING MATERIAL

STAIN, scar and flame resistant flooring material, said to possess the resilient, yet longer wearing qualities of rubber floor covering, is a homogeneous mixture of vinyl resins, plasticizers, stabilizers, pigments and colors. Neither moisture nor alkalies will injure the material, and it will extinguish itself when withdrawn from direct contact with flames, it is claimed. The material, which can be installed in either strip or tile form, is extremely thermoplastic, it is said, permitting it to flow around corners and sharp indentations without cracking. *Chemical Products Div., Goodyear Tire & Rubber Co., Akron, O.*

ARC-WELDING MACHINE



"HORNET" 36 A motor generator arc welding machine, available in 200, 300 and 400 ampere models, is a heavy duty machine which is said to have a simple control of current that is easy to adjust and pre-set accurately. It is smaller and weighs less than previous "Hornet" models. The machine is designed for either 220 or 440 volts with no change in relays or additional wires being required for voltage re-connection, it is said. It has a weather resistant totally enclosed drip proof constuction and special moisture proof insulation. *Wilson Welder and Metals Co., Inc., Dept. 1609P, 60 E. 42nd St., New York 17, N. Y.*

RUBBER-BASE FLAT WALL PAINT

COMPLETE washability and elimination of flame-spread hazard of oil paints are claimed for rubber-base flat wall paint known as Rubber-Coat Master Flat. Ink, Iodine, pencil marks and other stains are said to be easily removed from the paint. Manufacturer states it does not support flame even under intense heat, is resistant to fungus and is applied safely to new damp walls or old, with one coat giving excellent coverage. Suited to institution use, it comes in white and ten colors. *The Wilbur & Williams Co., Greenleaf & Leon Sts., Boston 15, Mass.*

STAINLESS STEEL PUMP

STAINLESS steel pump, intended for use in chemical, industrial, dairy, bottling and food applications has but one moving part, a tough, flexible impeller made of a neoprene compound, that is also chemically inert. The pump primes automatically, operating suction being in excess of 27" of mercury. The pump is available with provision for 1½" pipe connections. At 1750 rpm it delivers 55 gpm at 0 psi head, and 38 at 25 psi head. Additional information available. *Jabsco Pump Co., 2031 N. Lincoln St., Burbank, Calif.*

REFRACTORY COATING IN POWDER FORM

VITROSEAL is a refractory coating for preventing spalling action, resisting heat penetration and decreasing carbon, slag and clinker adherence in fire boxes, furnaces and crucibles. It is said to form a semi-glazed protective monolithic wall of from 8.5 to 9 hardness between fire and the fire brick that is impervious to heats up to 3390 F, and to withstand destructive effects of flame impingement and abrasion. It comes in powder form, and water is added before application, which can be done by either brush or spray. *Whitman Co., 1407 Esperanza St., Los Angeles 23, Calif.*

TOTE PAN LIFT TRUCK

ON this lift truck for lifting and transporting tote pans singly or in stacks, open forks engage the side handle or lip of tote pans and lift the entire load by a downward push of the operating handle. Easy elevation is said to be possible by adapting the principle of mechanical leverage using the handle as a lever and the rear wheels as a fulcrum. The truck, which has a capacity of 600 lbs., is designed of tubular and formed steel parts. An automatic lock holds the load in elevated position and pedal release controls lowering. Equipped with two swivel casters. *Lyon-Raymond Corp., Greene, N. Y.*

(*Please turn to page* 154)

THE *Responsibility* OF COMMUNITY LEADERSHIP

YOU as a leader in your community have a sacred obligation--to yourself, your family, your neighbor and your country, Use your experience and knowledge to the full extent of your ability to shape a public opinion which will help to establish right and justice for a lasting world peace, and preserve our country's cherished heritage of freedom for the individual.

Only through the intelligent, active work of community leaders can we keep America as the impregnable citadel of liberty and freedom.

The Youngstown Sheet and Tube Company

General Offices--YOUNGSTOWN 1, OHIO
Export Offices-500 Fifth Avenue, New York
MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS
Pipe and Tubular Products-Sheets-Plates-Conduit-Bars-Rods-Wire-Electrolytic Tin Plate-Coke Tin Plate - Cold Finished Carbon and Alloy Steel Bars · Tie Plates and Spikes.

Thousands of Jelliff baskets of all sizes, give unusual service under a wide variety of conditions. Jelliff baskets are designed and engineered to provide maximum performance and economy on the job. Special types can be produced to specifications in the Jelliff plant with its complete facilities for drawing, weaving and fabricating. Available in aluminum, brass, copper, monel, steel, stainless nickel and other metals and alloys.

Write DEPT. 208 For Literature

LEKTROMESH • RESISTANCE WIRE • FILTERS • WIRE CLOTH • STRAINERS • WIRE MESH PARTS • DIPPING BASKETS

The C. O. JELLIFF MANUFACTURING CORPORATION

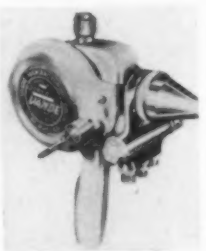
SOUTHPORT, CONN.

WIRE PRODUCTS Jelliff SINCE - 1860

CHANGEABLE PAINT SPRAY SYSTEM

INNER-LOCKING paint spray head, for use with any suction type paint spray gun, is locked by simple lever action to the head of a disposable rigid, metal-bottomed paper paint cup. This permits rapid change-over from one color paint to another, since one cup can be detached and another locked to the head in an instant. Inner-lock self-sealing lids protect the paint cups when not in use. Detailed information available. *Bradford Products Co., 2021 Cass Ave., St. Louis, 6, Mo.*

METALLIZING GUN



BACKFIRE is said to be completely eliminated in this metallizing gun for the application of metals such as steel, aluminum, zinc, lead, bronze, nickel, copper and others. Its nozzle is designed to provide the exact volume of oxygen for the gas used. No air cap adjustments are needed, it is said. Positive turbine control is obtained by a compound turbine containing a rotor and stator responsive to opposing propulsion fluids. Literature available. *Vande Mfg. Co., 1837 S. Michigan Ave., Chicago 16, Ill.*

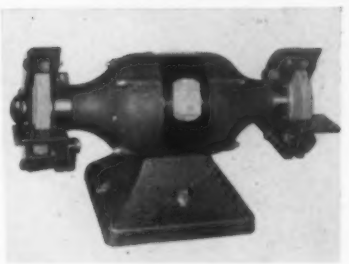
HAND AND PLATFORM TRUCK WHEEL

HAND and platform truck wheel is of bolted two-piece construction and is stamped from heavy 14-gauge steel. An accurately machined separate steel hub is pressed into the formed wheel disc, allowing the use of a full length 1" roller bearing, rather than two small bearings. The wheel accepts a 2¾" x 10" cushion rubber tire for normal service, and 2½" x 10" round solid rubber tire with flat face for heavy service. *Dico Mfg. Co., 400 S. W. 16th St., Des Moines, Iowa.*

COMBINATION JACK AND HOIST

COMPLETE in three pieces, stand, hoist and handle, this combination hoist-jack has a rated capacity of 2,000 lbs., and weighs 23 lbs. Portable, it can be used for setting machinery, lifting or pulling material, hoisting machinery onto skids, as a binder for various loads and strengthening cable for wire, etc. Height of the stand is 42". Included in its features is a "safety-load" handle designed to bend at maximum overload before chain breaks or hook straightens out. Bulletin HJ-1 available. *Coffing Hoist Co., Danville, Ill.*

BENCH GRINDER

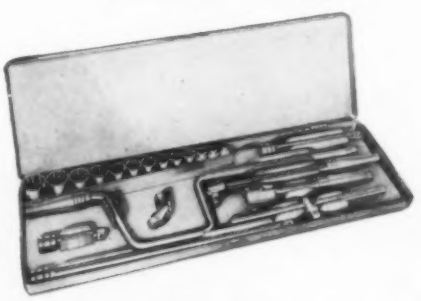


THIS bench grinder, designated Cadet Type 4BAS4, is equipped with a 1/3 hp. 3600 rpm. totally enclosed motor for 110 volt, single phase, 50 or 60 cycle. It is furnished with two 6" x ¾" x ½" grinding wheels. The distance between wheels is 16" and the height to center of spindle is 6¾". Included with the unit are ten feet of three conductor #16 rubber covered cable with two-prong attachment plug, one wire for ground. The safety type enclosed guards each have exhaust outlet, adjustable spark breaker and work rest. *Standard Electrical Tool Co., 2471 River Rd., Cincinnati 4, O.*

FRACTIONAL HP MOTORS WITH TRIPLE SEAL WINDINGS

TRIPLE seal windings, having high torque starting characteristics, are featured in the CSI capacitor start, fractional horsepower motors. The rotor is of all welded, pure copper bar construction. Low starting current combined with high starting torque is claimed for the motors. Frame rating of 1/6, 1/4, 1/3 and 1/2 hp, single phase, 60 cycle, 115-230 volt are available. The motors are said to be adaptable to such applications as conveyors, stokers, pumps, etc. *Torq Electric Mfg. Corp., 1068 Interstate St., Bedford, O.*

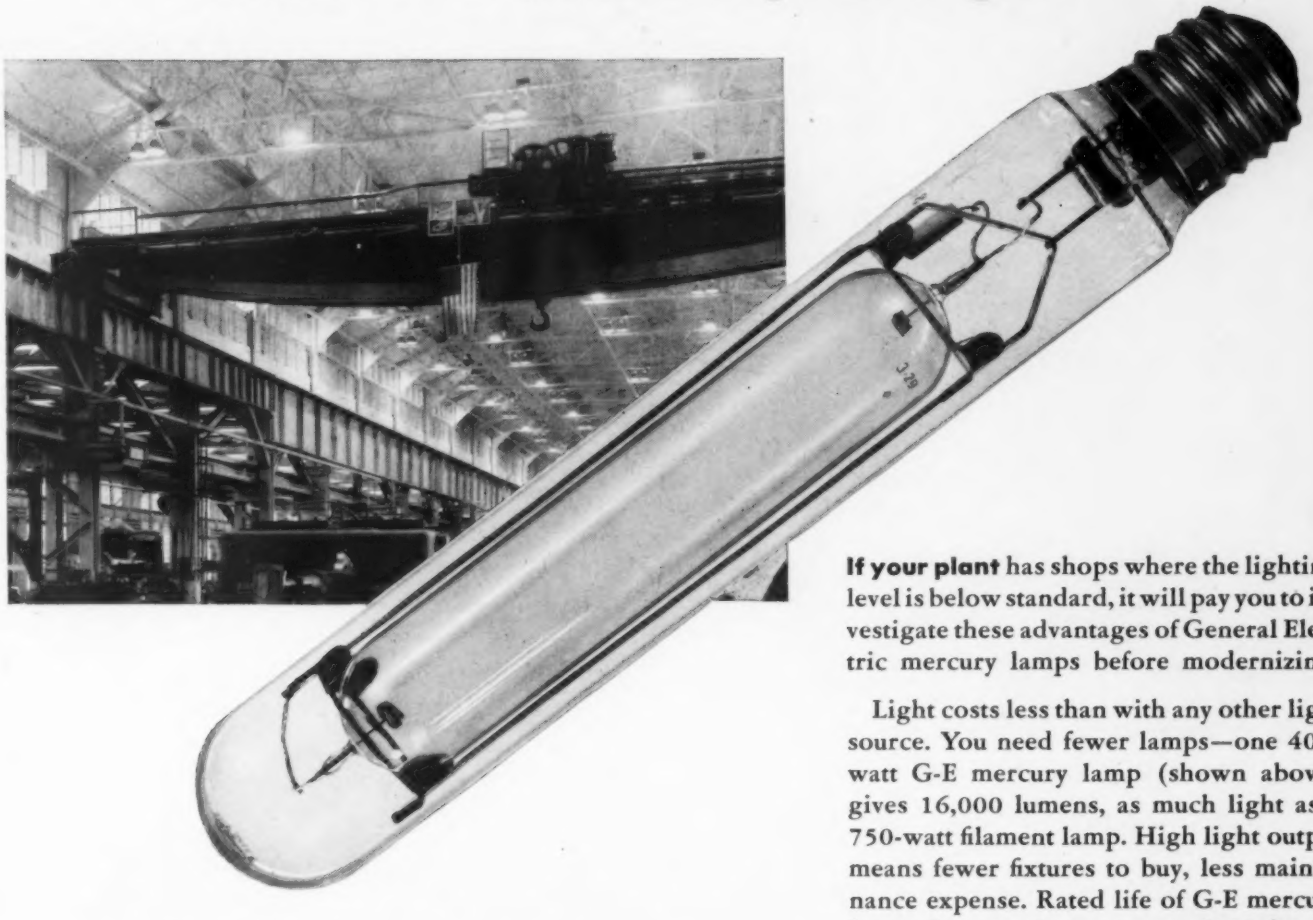
SOCKETS AND HANDLES



THIS set of ⅜" drive line of sockets and handles, known as the Snap-on Ferret Set, features the palm-grip handle, built to conform to the shape of the user's hand. Four sockets have been added, giving the set coverage between ¼" and ⅞". The sockets have four indentations on the inside of the socket drive hole to make the engaging of the ball found in the handle of the driving unit an easy job, it is said. The set comes in a streamlined box with rounded corners and extra deep partitions. *Snap-on Tools Corp., Kenosha, Wis.*

(*Please turn to page* 156)

Why Planned Lighting costs less with G-E Mercury Lamps



If your plant has shops where the lighting level is below standard, it will pay you to investigate these advantages of General Electric mercury lamps before modernizing.

Light costs less than with any other light source. You need fewer lamps—one 400-watt G-E mercury lamp (shown above) gives 16,000 lumens, as much light as a 750-watt filament lamp. High light output means fewer fixtures to buy, less maintenance expense. Rated life of G-E mercury lamps is extra long—up to 6000 hours, depending upon wattage and number of starts.

Whatever Lamps you need
INFRARED
For drying, baking, curing and other heat processes.
FLUORESCENT
Soft, cool light makes work safer, easier.
FILAMENT
All types and wattages for every lighting need.
ROUGH-SERVICE
Rugged lamps that withstand shocks and bumps.
INDICATOR
Glow and filament types, for instrument panels, etc.
SILVERED BOWL
Indirect lighting at low cost, 60 to 1000 watts.
-G-E makes 'em all

IMPORTANT REASONS *why it pays to insist on G-E when you buy lamps*

1. *Complete line to choose from—over 10,000 types and sizes.*
2. *Quality assured by 480 tests and inspections.*
3. *G-E makes all lamp parts.*
4. *Most improvements in lamps and lighting have come from General Electric.*
5. *Services of G-E lighting engineers conveniently available.*
6. *General Electric research works constantly to make G-E lamps Stay Brighter Longer.*

GENERAL ELECTRIC

LAMPS *Stay Brighter Longer!*

"KEX" *Industrial Wiping* TOWELS

General View of Diesel Engine Test Shop, Baldwin Locomotive Works, Philadelphia, Pa.

...More Important Every Day to the *AMERICAN INDUSTRIAL SCENE*

This great Diesel Engine plant is one of many of America's vital industries where KEX Industrial Wiping Towels contribute to greater efficiency of operation.

The reason why KEX Industrial Wiping Towels have won for themselves such an important role is because they have been produced *for wiping only*. They have no harsh seams... no hidden buttons... no abrasive particles to mar delicate and expensive surfaces.

They come in neat, easily stored bundles that help control distribution—*every wiping towel* in the lot is *thoroughly cleaned and inspected before delivery to you.*

Take your cue from industrial leaders who make it their business to keep operating costs down—and efficiency up.

Nothing to Buy—No Expensive Inventory—Just a Low Monthly Rental. The first month should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.

"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.

ENCLOSED THERMOCOUPLES

"THERMO-TIPS" are enclosed thermocouples for general foundry use, interchangeable with existing equipment. They can be constructed in one piece in any length or shape. They are supplied as standard in 18″ and 24″ lengths, straight or with 45° or 90° bends using 16 gauge matched chromel-alumel elements. Shorter lengths also available. Matched thermocouple wires of 20 gauge size or of iron constantan can be supplied for special purposes. *Industrial Instrument Co., 2785 Saluson Ave., Huntington Park, Calif.*

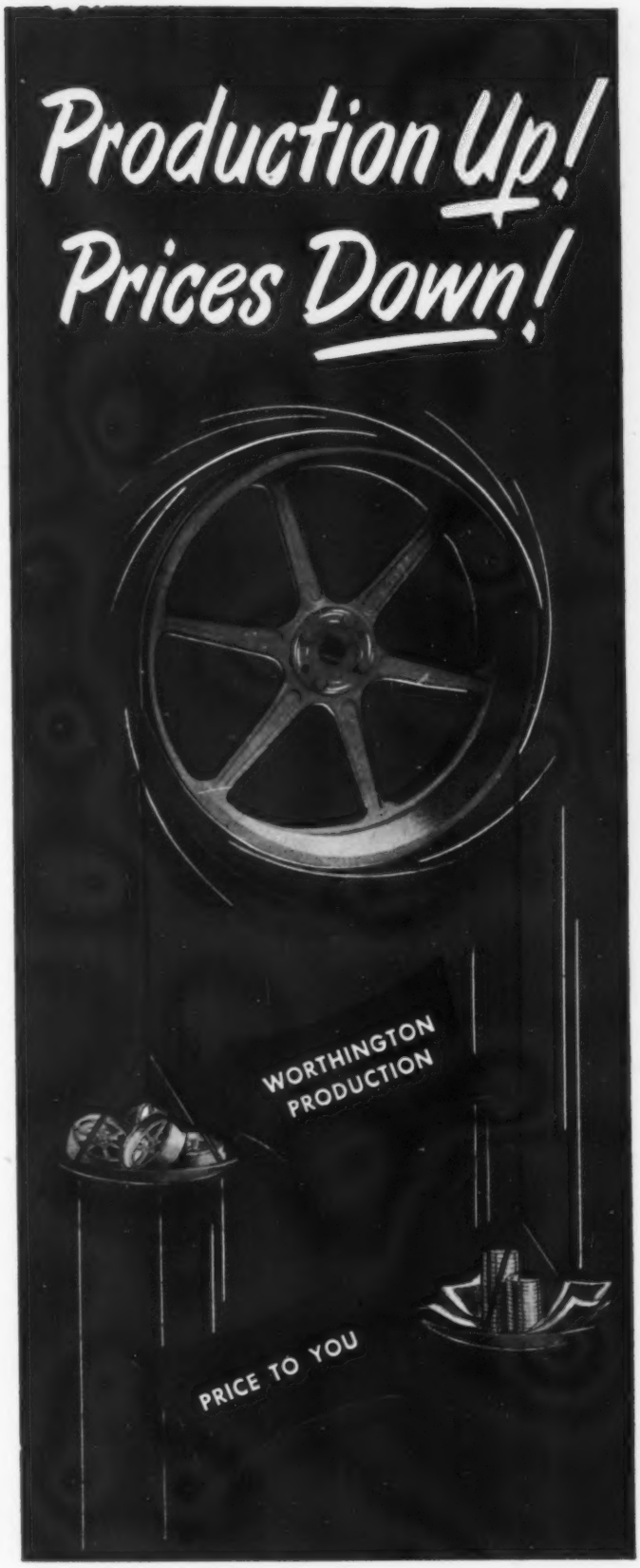
ARC WELDERS

ILLUSTRATION shows one of a line of AC arc welders that includes three industrial models, 200, 300 and 400 amps. All models are NEMA rated. Features claimed include: patented electrical and magnetic circuits which result in an instant starting, smooth and stable arc at all amperage settings; compactness, due to the fact that the movable core travels less than 1″ to cover the entire range of stepless amperage control; the absence of rotary parts; efficient cooling. Circular No. 101 available. *John A. Kern Co., 224 (36) N. Loomis, Chicago 7, Ill.*

MULTIPLE DRUM HANDLER

ILLUSTRATION shows Tray-Hart drum carrier which can handle 1, 2, 3 or 4 drums at a time. The carrier is said to grip firmly and gently, and to handle drums with 2″ diameter variances and 6″ heights in one operation. It will fit any fork type power truck and can be removed in 10 minutes, it is claimed. Other features are: bottom design positions individual drums for handling; positioner allows 5″ either side of center; hydraulic lines connected with Hansen two-way shut-off couplings. *Pallet Engineering Co., 725 Second St., San Francisco 7, Calif.*

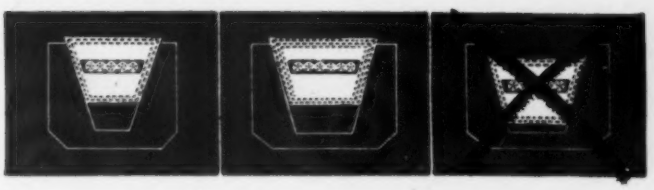
(*Please turn to page* 158)



Now You Can Get Worthington QD Sheaves at Substantial Price Reductions

Worthington's increased production of QD Sheaves — to meet industry's growing demands—has resulted in lower production costs, which we pass along to you — our customer, as a substantial price reduction in stock "A" and "B" sheave sizes. Service has been improved, too! From conveniently located stocks you can choose over 25,000 QD Sheave combinations for V-Belt drives ranging from fractional to 200 hp.

Strength Where It's Needed Most. Upper sketch shows I-Beam construction in Worthington QD Driven Sheaves. Compare it with conventional design below and note how material is concentrated where strain is greatest — putting strength where strength is needed most. Taper-mated, load-tested hubs and rims, full-sized pull-up bolts and I-Beam arm construction are Worthington features which make the QD Sheave the "Strongest Sheave for its weight ever made" — a plus value to sheave users.



Customer Preference Based on Market Research. Customer preference dictated a basic change in the original QD Sheave from a combination groove to a separate "A" and a separate "B" groove — which is what you, our customer, wanted — to give you a better appearing sheave and a better fit between belt and groove. Worthington QD Sheaves are custom-built to fit the belt — an "A" belt in an "A" groove — a "B" belt in a "B" groove. Available in listed stock sizes from 3″ to 22″ diameters in "A" section; from 4″ to 38″ in "B" section.

Get the Proof. A demonstration in your own shop will convince you that only Worthington — the original QD Sheave — is Easy to Get On — Easy to Get Off — Yet Always Tight on the Shaft — proof that *there's more worth in Worthington.*

Contact your nearest distributor for a demonstration today. Worthington Pump and Machinery Corporation, Merchandising Div., Harrison, N. J. 36 District Offices throughout U. S.

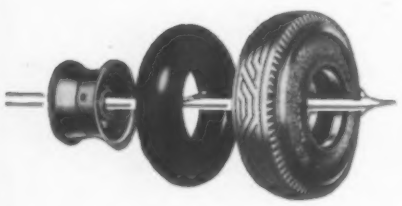
WORTHINGTON

B7-J

PRODUCTS BASED ON MARKET RESEARCH

Centrifugal Pumps | Rotary Pumps | Steam and Power Pumps | Vertical and Horizontal Compressors | Multi-V-Drives | Variable Speed Drives

Faster, Easier, at Lower Cost
This NEW BOOK
GENERAL INDUSTRIAL TIRES
THE GENERAL TIRE & RUBBER COMPANY
INDUSTRIAL TIRE DIVISION AKRON, OHIO, U.S.A.
tells how to save time, money and labor with industrial Tires . . .
Write for it Today!
The GENERAL TIRE



Factory assembled units: Heavy-duty tire, separate tube, heavy-duty demountable wheel and rim; 8" to 22" o. d. for loads of 180 to 1900 pounds per tire.

Manager, Industrial Tire Sales, Dept. 8
The General Tire & Rubber Co.
Akron, Ohio

Dear Sir,
Please send me, without cost or obligation, your new catalog which tells how to save time, labor and money with General Industrial Tires.

Name_____

Title_____

Company_____

City_____ State_____

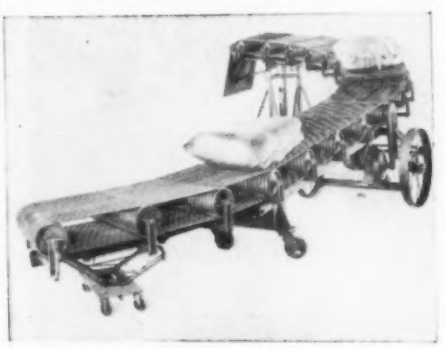
SMALL SIZE PORTABLE DRILL

LIGHT weight portable electric drill No. 24, ¼" capacity, is described as suitable for drilling in metal, wood and composition materials up to its rated capacity. It is 8½" overall, and weighs 3¼ lbs., making it handy for use in close quarters, and for carrying in tool kits. Other features include: aluminum die cast housing; sturdy and durable gears, trigger type switch with locking device, three-jaw geared threaded Jacobs chuck. The drill can be converted into a bench drill press by locking it in No. 514 stand. *Stanley Electric Tools, New Britain, Conn.*

MOTOR-DRIVEN BATTERY CHARGER

BATTERY-charging unit, motor-driven, is designed for charging 6-cell lead acid, and 10-cell Edison batteries. Starting, charging, and shut-down are performed automatically by the unit, which is said to meet all Industrial Truck Assn. standards for 8-hour charging periods. The motor generator set and controls are contained in a cabinet 34" high, 24½" wide and 12" deep. Timer, ammeter, and control switch are mounted on sloping top. Unit can be used on 220- or 440-3-phase, 60-cycle power supply. *General Electric Co., Schenectady, N. Y.*

FLEXIBLE CONVEYOR



POWER-driven Flexoveyer portable conveyor for bags, bales and cartons, will operate around curves, or a series of curves up to a 90° angle. It will go through doorways from one room to another at different elevations. Flexible joints at 20-inch intervals permit wide range of swivel action at either receiving or delivery end. Conveyor will operate in either direction. Head end can be raised and lowered by hydraulic hand-operated lift within a wide range. Steel spring belts comprise the conveying element. Bulletin #100 available. *E. C. Horne Machinery Co., 315 E & C Building, Denver 2, Colo.*

(*Please turn to page* 164)

"I've telephoned Chase . . .

their warehouse is shipping the first part of that order"

SURE, Chase fills BIG orders . . . sheet brass by the carload . . . copper nails by the ton. But orders like those take time to fill, and you may be in a hurry.

That's why . . . when production lines can't wait . . . it pays to contact your Chase warehouse for a small part of your order . . . enough to keep your production rolling until the mill order comes through.

For brass and copper in any quantity . . . from a few lengths of rod to a million silicon-bronze bolts . . . you can count on Chase for the best possible service.

Chase Brass & Copper Co. Incorporated, Waterbury 91, Conn. A subsidiary of Kennecott Copper Corporation.

Chase

the Nation's Headquarters for
BRASS & COPPER

WATERBURY 91, CONNECTICUT — SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . *handiest way to buy brass*

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON† (†Indicates Sales Office Only)

SAVE 50%

ON YOUR COTTON BUFF WHEEL COSTS

JACKSON AIRWAY Ventilated BUFFS now give you these important features

WEARS TWICE AS LONG - NO RAVELING - NO RAKING

BURNING ELIMINATED - SAVES COMPOUNDS

FASTER CUTTING, DOES NOT RIDGE WORK

there is only ONE Jackson Airway Ventilated buff

Jackson Airway Ventilated Buffs produce better work faster . . . and at lower cost. They eliminate burning and ridging . . . save buffing compounds . . . wear twice as long . . . because Jackson patented construction incorporates full ventilation permitting air to cool the buff internally. Whether your buffing equipment is hand operated, semi-automatic or fully automatic, comparative tests with ordinary buffs will definitely prove a 50% saving. The manufacturers of modern buffing machines specify Jackson Airway Ventilated Buffs for best results. Conclusive proof that Jackson Airway Ventilated Buffs will save you 50% is yours for the asking. Write, wire, or phone The Jackson Buff Corp., 21-03 41st Ave., Long Island City 1, New York.

WARNING NOTICE—Jackson Buff Corporation of Long Island City, N. Y., has rights to U. S. Patents Nos. Re 19,894 and 2,140,208 which have broad claims covering an air cooled buff having means for the admission of air through the sides of the buff. Owner intends to protect all rights and stop infringement.

JACKSON BUFF CORPORATION

21-03 FORTY-FIRST AVENUE • LONG ISLAND CITY 1, NEW YORK

NO MATTER WHAT YOUR PRODUCT OR SERVICE

American DECALS can help you-

ADVERTISE IT!

Make moving billboards of your trucks with colorful AMERICAN Truck Decals! Huge circulation, low cost, uniformity, true product reproduction. For large or small fleets; speedily applied. Ideas submitted.

SELL IT!

AMERICAN Decal Window Signs and Valances pay off at the point-of-sale! Identify your dealers; lend colorful appeal to your brand name! Send for folder!

IDENTIFY IT!

Trade-mark your product with AMERICAN Decals, quickly and easily applied; attractive, durable identification! Our Service Department can solve your particular problem.

DECORATE IT!

The finishing touch that provides "buy-appeal"! Easily applied to most surfaces: paint, varnish, glass, metal, plastic, leatherette, etc. Stock or specially created designs.

-and INSTRUCT!

Use AMERICAN Decals to give operating or lubricating instructions. Durable, lasting—no rivets, no holes. Colorful, attractive, applicable to almost any surface.

American Decals

American Decalcomania Co.

Offices in all Principal Cities

4334 W. FIFTH AVE., CHICAGO 24, ILL. 636 Eleventh Ave., NEW YORK 19, N. Y.

Thermoid Air Hose
Tailored for the Job!

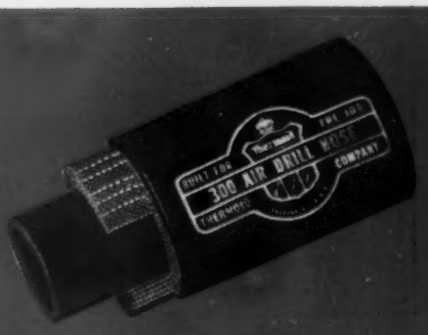
Three popular types from Thermoid's complete Air Hose Line

For heavy duty service where oil may be present in the air line, and cover abrasion is severe.

Thermoid #210 Type—Special Neoprene Oil-Resisting Inner Tube reinforced with tough plies of braided yarn, abrasion resisting cover—pressures up to 300 P.S.I. furnished in lengths of approximately 500 ft. in sizes ¼ to 1" and approximately 250 ft. in 1¼ and 1½".

Wrapped construction—for similar heavy duty service where hose is subject to rough handling.

Thermoid #300 Type—Neoprene Tube reinforced with heavy, square woven duck, abrasion resisting cover—pressures up to 300 P.S.I. Sizes ½ to 3" in 50 ft. lengths.



For light duty air connections, blow-out work and similar service.

Thermoid #220 Type—High quality Inner Tube compounded to resist oil, tough cover. Furnished in lengths of approximately 500 ft. in sizes ¼ to 1" and approximately 250 ft. in 1¼ and 1½".

Additional types of Air Hose are available for specific services

It's good business to do business with Thermoid

In more than 60 years of working closely with the engineers of industry, Thermoid has developed a *complete* line of Industrial Rubber Products—with the type of construction carefully worked out for every degree of service.

Thermoid distributors carry large stocks of our standard items and always work closely with the Thermoid sales engineers when their customers have special requirements to be met.

The Thermoid Line Includes: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid

Thermoid Company • Trenton, N. J., U. S. A.

Automotive • Industrial • Oil Field • Textile Products

You Need MH* to Reduce Costs!

*MH is MASS HANDLING—the systematic movement of the most units, in the shortest time, at the lowest cost.

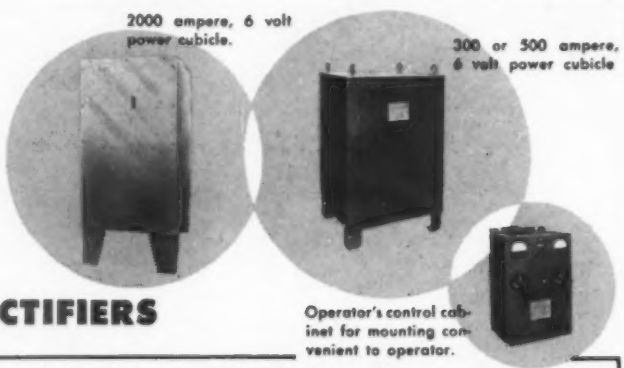
WHY expand your plant when Towmotor Mass Handling will reduce your costs and give you greater competitive advantage? Towmotor Fork Lift Trucks increase production by keeping production machines constantly supplied; they increase storage by stacking higher; they increase profits by cutting handling time on every handling job. Investigate MH—the modern way to reduce handling costs.

SEND FOR FREE BOOK
"The Towmotor Fork Lift Truck and Tractor Guide" Illustrated — Informative — Helpful. Towmotor Corp., Division 11, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR THE ONE-MAN-GANG **FORK LIFT TRUCKS and TRACTORS**

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

get greater rating flexibility with H-VW-M COPPER OXIDE RECTIFIERS


2000 ampere, 6 volt power cubicle.
300 or 500 ampere, 6 volt power cubicle
Operator's control cabinet for mounting convenient to operator.

By grouping power cubicles and control cabinet in various parallel and series combinations, you can obtain almost *any* desired rating for electroplating, electrotyping and anodizing with a Hanson-VanWinkle-Munning Copper Oxide Plate Type Rectifier.

For example — cubicles rated at 300, 500 and 2000 amperes at six volts can be reconnected externally for half the current at twice the voltage. They can be grouped together with the proper control to give voltage ratings from six to 48 volts, and current ratings up to 10,000 amperes. And the control cubicles are reconnectable for an input of either 220 or 440 volts, 3 phase, 60 cycles.

H-VW-M rectifiers over 18 k.w. capacity use the saturable reactor type of control which has many distinct advantages. It is a stepless control that makes possible varying voltages without breaking or even momentarily diminishing the load current. Further, an automatic regulator can be supplied which maintains a constant voltage within plus or minus 1½% over the normal operating range.

In addition to flexibility, H-VW-M rectifiers are moderate in cost as well as economical to install and operate. Freedom from moving parts assures low maintenance. For full details about these efficient units, write for Bulletin ER-103-1.

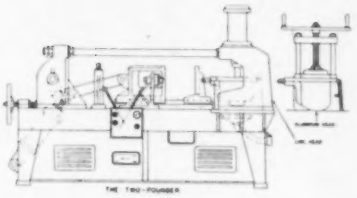
Immediate Delivery

HANSON-VAN WINKLE-MUNNING COMPANY
MATAWAN, NEW JERSEY
Manufacturers of a complete line of electroplating and polishing equipment and supplies
Plants: Matawan, New Jersey • Anderson, Indiana
Sales Offices: Anderson • Chicago • Cleveland • Dayton • Detroit
Grand Rapids • Matawan • Milwaukee • New Haven • New York • Philadelphia
Pittsburgh • Rochester • Springfield (Mass.) • Stratford (Conn.) • Syracuse

SINCE 1820

3474

DIE CASTING MACHINE

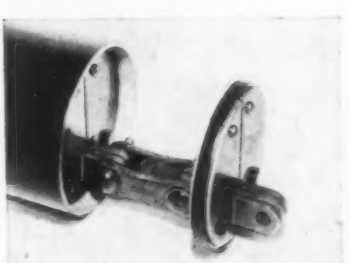


TWO-POUNDER die casting machine for both zinc and aluminum has a production rate of about 350 shots per hour for each metal. The changeover from zinc to aluminum die casting can be made without the use of the hand ladle for each shot in aluminum, according to the manufacturer. The capacity is 2 lbs. on zinc and 1 lb. on aluminum, on 12 x 18-inch standard die blocks. The machine is completely pneumatically operated and controlled entirely from one toggle switch. *DCMT Sales Corp., Beach 79 St. at Bay, Rockaway Beach, N. Y.*

MAGNETIC SEPARATOR

LIGHTweight adjustable hand magnet known as the Model S Magnetic Separator is self-powered, operated with one hand and lifts up to 15 lbs. It releases its load when a finger-tip lever is raised. Within the moisture proof aluminum and stainless steel case are two 4-inch Alnico magnets which will not lose power, regardless of kind or length of use, it is claimed. Magnet requires no servicing and has nothing to get out of order. Dimensions are 3" x 5½" x 8"; weight 3¾ lbs. *Multifinish Mfg. Co., 2116 Monroe Ave., Dept. 201, Detroit 7, Mich.*

CIRCULAR FLIGHTS



SYNTHETIC rubber flights mounted on sealed pin chains will convey a wide variety of materials through a 3", 4", 6", 8", 10" pipe or semi-circular trough section. The flight has a circular cross and is said to wipe pipe or trough clean. Maker claims the design has been used in such fields as coal, welding flux, cement, sugar, copper shot conveying. The flight will follow a pipe in any direction, it is said. *Hapman Conveyors, Inc., Detroit 21, Mich.*

(*Please turn to page* 166)

eye appeal . . . an O. D. specialty

Surveys have proved that eye appeal is synonymous with sales appeal!

Yes, and OLD DOMINION BOX COMPANY has proved its name is synonymous with appealing packages! Because Old Dominion's creative staff is constantly designing new sales-building boxes and because of its extensive product research and complete packaging service, more and more manufacturers are bringing their packaging problems to Old Dominion.

Whether your preference is for folding cartons, canisters, gift boxes, set-up boxes, or visi-tainers, *plan* to put more eye-appeal in your package! *Plan* to consult Old Dominion. Send for General Line Folder No. 86.

OLD DOMINION *Box Company Inc.*

PLANTS LOCATED THROUGHOUT THE SOUTH

CHARLOTTE, N. CAROLINA

THE SOUTHERN BOX MAKER WITH A NATIONAL REPUTATION

OUT OUR WAY

WELL, WE'RE DOWN TO OUR LAST TWENTY BAGS OF SOL-SPEEDI-DRI, AND I DIDN'T WANT TO BE CAUGHT---
WELL, ORDER SOME MORE! ORDER A DOZEN CARLOADS! TWENTY, IF YOU NEED 'EM!
BEIN' A BIG EXECUTI 'E DON'T LOOK SO HARD-- JUST HOLLER, "GIT IT! GIT WHUT YOU NEED!"
THAT'S TH' KETCH--IF YOU NEED 'EM! BUT, BOY, HE DON'T HAFTA WORRY! WE KIN ALLUS USE SOL-SPEEDI-DRI AROUND TH' SHOP!
J.R.WILLIAMS
AUTHORITY
COPR. 1948 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

YOU CAN COUNT ON SOL-SPEEDI-DRI

American industry has learned that it can depend on the uniformly high quality of SOL-SPEEDI-DRI—the field's original and foremost absorbent for all liquids. This quality is guarded carefully from mine to user by the most modern methods and equipment. The raw material for SOL-SPEEDI-DRI is obtained by *selective* mining, and is transformed, under constant laboratory control, into the finished product. There's no waste in SOL-SPEEDI-DRI. Packed in special moisture-proof bags, every grain of SOL-SPEEDI-DRI comes to you at the peak of efficiency to give you the most for your money.

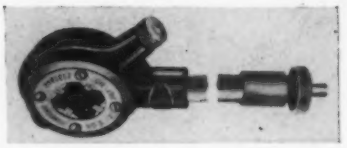
SOL-SPEEDI-DRI has been tested and proved by American industry. The result? More SOL-SPEEDI-DRI is used by the nation's shops and plants than any other material of similar nature! That's ample proof of SOL-SPEEDI-DRI's out-in-front performance. Remember, if SOL-SPEEDI-DRI is *on* the bag, quality is *in* the bag!

WHEN YOU BUY, BE *SURE* IT'S SOL-SPEEDI-DRI!

Safety and Maintenance Co., Inc., No. 1 Wall St., New York 5, N. Y.

Warehouse Stocks Maintained in Principal Cities of the United States and Canada

SELF-OILING PIPE THREADER



FULL day's supply of oil is carried in the handle of this ratchet pipe threading tool, and the dies may be oiled while in use by pressing the plunger at the end of the handle. Dies are located in direct line with the handle. Easier operation, longer die life, and possibility of threading of shorter, close-coupled nipples, are claimed. Jet of oil applied while cutting threads increases life of the dies by as much as 150%, maker states. Die heads may be changed instantly and die segments are replaceable. Die heads from ⅛" through 1¼" are available, with right hand dies. *Threadwell Tap & Die Co., Greenfield, Mass.*

VINYL PLASTIC COATED FABRICS

VINYL plastic coated fabrics for industrial use are said to be flameproof, mildew proof, impervious to moisture and highly resistant to abrasive wear. One type has a jute base and another has a cotton duck base. Fabrics are thoroughly impregnated with the material and are coated on both sides. They are claimed to have high tensile strength and to resist creasing, flexing and puncturing. Available in sheets or rolls, or made into troughs, tubing, piston covers, boots and dust covers. *American Brattice Cloth Corp., Warsaw, Ind.*

BOILER SAFETY VALVE

STEAM and hot water boiler safety valve, known as Fig. 34, available in 7 sizes from ¾" to 3", features all-cast construction with top guided, flat seating disc. Try lever is so arranged that weight loading cannot prevent valve from opening, it is said. Normally set at 10 or 15 psi, the valve can be set at pressures up to 45 psi. Capacities in steam/HR discharge from 257 lbs for ¾" size to 4168 lbs. for 3" size. Valve meets A.S.M.E. code, Case 1026 specifications and is NB certified, according to maker. *Kunkle Valve Co., Fort Wayne, Ind.*

(*Please turn to page* 168)

The slot's the thing! You can get current at the exact spot where it is needed, by tap-off Plugs or Trolleys.
This electrician is plugging into Universal Trol-E-Duct right where he wants. BullDog manufactures Vacu-Break Safety Switches • SafToFuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution DUCT • "Plug-In" Type BUStribution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

Is your lighting system light-fingered?

IN MANY WAYS, old-style lighting systems take money right out of your pocket.

They start picking your pocket every time you move a fixture. First, there's the cost of a rewiring job. Then there's the cost of the production shut-down when current is cut off to tap in. Finally, there's the cost of materials scrapped to make the change.

Even no change costs money

And what if you decide to save this expense by making the old lighting layout suffice? Even then you'll find the old system takes away profit dollars, through reduced production caused by inefficient lighting.

The solution

Do away with these losses; install BullDog Universal Trol-E-Duct! This modern electrical system provides current *when* you want it, exactly *where* you want it.

BullDog Universal Trol-E-Duct is completely flexible. It serves lighting fixtures of any type, and portable tools as well. At any point along its continuously slotted duct, twist-out plugs or trolleys can tap off power from the totally-enclosed bus bars. It's safe . . . simple . . . quick!

All parts salvable

Where a major plant change might necessitate moving the entire electrical system, you can take down BullDog Universal Trol-E-Duct and reinstall it according to new requirements. All material can be re-used —*you scrap no parts.*

Ask your BullDog Field Engineer to show you a Universal Trol-E-Duct installation near your own plant. Or, write BullDog direct for descriptive folders.

BullDog's Field Engineers welcome the chance to sit in on planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation and maintenance costs, as well as highest efficiency and reliability in actual operation. Why not take advantage of this pre-building service?

BULLDOG ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN—FIELD OFFICES IN ALL PRINCIPAL CITIES

IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

BULLDOG

HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

Have You Checked Your Washrooms Lately?

The condition of your washrooms has a direct bearing on employee morale. Clean, sanitary washrooms build goodwill and respect for your company. Here are four important ways to improve washroom conditions:

1 **TOILET TISSUE**

It's important to protect the supply of toilet tissue from unclean or infected hands. Only the user touches Onliwon Tissue because it's dispensed from locked, metal cabinets. Cuts waste, too.

2 **TOWELS**

No washroom is complete without efficient, sanitary towel service. Onliwon Towels are strong even when wet, lint free, pleasant to use—and it takes only one to do a complete drying job.

3 **SEAT COVERS**

Toilet seats in common use are bound to be potential sources of infection regardless of how clean they appear to be. With Onliwon Seat Covers you can help to guard against this danger.

4 **WASTE RECEPTACLE**

Washroom studies establish that neat-looking equipment encourages employees to have neat washroom habits. Onliwon's Waste Receptacle is designed in accordance with that principle.

A.P.W.

ONLIWON

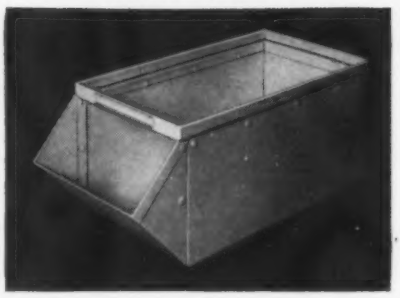
WASHROOM SERVICE

Industrial Division, Room 22
A.P.W. Products Company, Inc.
Albany 1, New York

Please send information concerning Onliwon Washroom Service and name of nearest Onliwon distributor.

Name.....
Position.....
Company.....
Street.....
City.....*State*.....

STACKING BIN

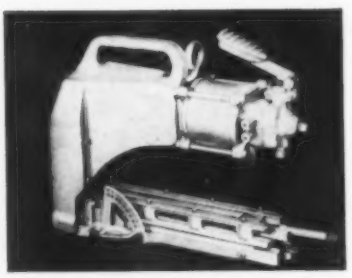


STACKING bin of heavy-gauge aluminum, called "Stackbin" is hopper-fronted and designed for storage, transportation and assembly of tools parts and materials. The bin is said to be sturdy, light in weight and only one-third as heavy as steel. Stored in "Stackracks" any bin is said to be immediately accessible without disturbing any other bin. *Stackbin Corp., Pawtucket, R. I.*

ELECTRODE ELIMINATES "UNDERBEAD CRACKING"

FLEXARC LoH electrode is a hydrogen free, mineral type, extrusion coated electrode that is said to eliminate "underbead cracking". Ranging in diameters from ¼" to ⅛" the electrodes are recommended for use with direct-current reverse polarity and also for alternating current. Among the typical applications are: welding high carbon steels, welding high carbon to low alloy steel, welding steel parts of unknown analysis, etc. Their application is said to be typified by quiet arc action and absence of usual spatter. *Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.*

CARTON STAPLERS



ILLUSTRATED is pneumatically operated portable International stapling machine, featuring "retractable anvil" device which drives the staple from the outside, and securely clinches inside, without disturbing the contents of the carton. Staplers are also made in stationary style, pneumatically or electrically operated, for use where facilities are centralized, volume is large, or cartons are hard to handle. Installations have been made to handle cartons of variable lengths, widths and heights, cartons of variable board thicknesses, and to clinch top and bottom (on two sides) individually or simultaneously. Catalog available. *International Staple & Machine Co., Havertown, Pa.*

(*Please turn to page* 170)

HYDRAULIC PUMP OILER!

It's the mechanics' favorite . . . easy to operate . . . always ready for action . . . durable. Delivers a drop or a full stream . . . any oil that flows. Convenient thumb lever control.

Made to Eagle quality standards—seamless steel bodies; double-seamed bottoms; guaranteed leakproof; copperized finish; detachable seamless welded steel spouts; brass coupling with machine-cut threads; ball valves; *no soldered connections;* straight, angle or flexible spouts—all interchangeable.

Oil With An "Eagle" Oiler

Buy from your Distributor.

EAGLE MANUFACTURING CO.

Dept. P 248 Wellsburg, West Virginia

WIREGRIP precision made Belt Hooks come with extra (patented) blue aligning cards—are held more rigid, assuring perfect alignment of hooks—less hook loss from handling—a better job when applied with any make lacing machine. 6 sizes.

STEELGRIP Flexible Lacing, applied with a hammer, clinches over and protects end of belt. Makes strong, flexible joints. Boxed with 2-piece hinged rocker pins or can be obtained in long lengths for conveyor belt use.

ARMSTRONG-BRAY & CO.
The Belt Lacing People
5378 Northwest Hwy., Chicago, Ill.

Check SANDVIK'S four point quality when you specify SPRING STEEL

- ✓ HIGH FATIGUE LIFE
- ✓ FINE SURFACE FINISH
- ✓ UNIFORM SIZE
- ✓ CLOSE TOLERANCES

When you have a spring steel application that calls for these properties in more-than-usual degrees, check with SANDVIK. You'll most likely find that there's a SANDVIK steel that will give you exactly the kind of spring performance that you want.

SANDVIK steels are made from the purest ore obtainable by carefully controlled processes. Charcoal of low phosphorous and sulphur content is used exclusively in the smelting. This inherent purity is the basic reason why SANDVIK steels have been meeting the high physical demands of a wide variety of special uses for over a quarter of a century.

You can get SANDVIK cold-rolled, high carbon or alloyed, spring steel

- annealed, unannealed or hardened and tempered
- with bright finish or blue or yellow polished
- with round edges or square edges
- in a wide range of thicknesses from .001" up.

Phone or write for further information and current stock lists. SS-22

SOME SANDVIK SPECIALTY STRIP STEELS

Band Saw Steels: Wood, Butcher and Metal · Clock and Watch Spring Steels Compressor Valve Steel · Conveyor Belting · Doctor Blade Steel · Feeler Gauge Steel · Knife Steels: Art, Surgical, Textile, etc. · Magnetic Sound Recording Tape Piston Ring Segment and Expander Steels Razor Blade Steel · Reed Steel · Shim Steel · Sinker Steel · Spring Steels · Textile Steels · Vibrator Reed Steel.

SANDVIK STEEL, INC.

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180 N. Michigan Ave., Chicago 1, Ill. FRAnklin 1745
1736 Columbus Rd., Cleveland 14, Ohio CHerry 2303
WAREHOUSES: New York and Cleveland

hidden thirst at work

Do your workers drink enough water to maintain their efficiency? Recent scientific studies* indicate they should drink enough to replace perspiration. Otherwise their efficiency and endurance rapidly decrease.

That is why the cool, palatable water from a General Electric Water Cooler can be so important. "During work," say the studies, "men never voluntarily drink as much water as they sweat."

Make it easy for your workers to drink enough... put General Electric bubblers or bottle coolers in convenient corners. It costs only 2¢ a day to operate an economical G-E Water Cooler . . . and it may mean dollars saved in production efficiency. Call your General Electric Dealer for full information. He's listed under "water coolers" in your Classified Telephone Directory.

General Electric Company, Air Conditioning Dept., Section 8292 Bloomfield, N. J.

*American Journal of Physiology Vol. 142, No. 2

GENERAL ELECTRIC

Water Coolers

HEAVY DUTY JACK

LOAD pump and speed pump are combined in one unit in this heavy-duty hydraulic jack, available in two capacities, the 30-ton FB-11 and the 50-ton GB-11. The load pump cuts in automatically when the speed pump has raised the saddle to the load. The base is machined from steel blocks 2¾" thick, to withstand extreme stress. Other features include recessed safety release valve, overall-closed-construction, ports for gauge or valve installation, pump beam protection. Catalog J-46 available. *Blackhawk Mfg. Co., Milwaukee 1, Wis.*

SELF-PROPELLED MAGNET CRANE

ONE-MAN, single-engined, self-propelled magnet crane for handling iron and steel scrap and ferrous foundry products is designated Model 22A. It has hydraulic steering, an 8-foot wheel base and a 22-foot turning radius. It accommodates 29-inch or 36-inch electromagnets powered by 3-kilowatt or 5-kilowatt generators. The machine can be converted to a utility crane, clamshell or dragline, all attachments being used on the same 30 foot boom. *Wayne Crane Div., American Steel Dredge Co., Inc., Fort Wayne, Ind.*

POWER LIFT TRUCK

WALK-ALONG power lift truck, designated the "Go-Getter" has a single package hydraulic lift unit on which all adjustments can be made from the outside. Distance between control handle and back of battery box is only 27½". The truck comes in 4000 and 6000 lb. capacities. Heights 7", 9", or 11", and lengths 36", 48", 54", 60", 72" and over with 26½" width, are available. Platform will raise a full 4". An under-clearance of 3½" avoids hanging on ramps or aprons, it is said. The truck operates on a 6-cell, 13-plate battery. *Revolvator Co., North Bergen, N. J.*

(*Please turn to page* 172)

3M ADHESIVES TAKE TO THE AIR

APPLICATION IS SIMPLE—A fillet of 3M Adhesive is placed between the windshield and the exterior and interior metal frames, after which the assembly is riveted and the adhesive allowed to air cure. The result is a perfectly waterproof job.

ADDITIONAL INFORMATION is contained in a booklet we're preparing that shows the variety of ways 3M Adhesives are helping in industry and construction. Fill out the coupon below and your free copy will be mailed as soon as the book is off the press.

Windshield sealing problem licked by 3M

This plane manufacturer made exhaustive tests of every available material in his search for a completely waterproof windshield sealer. The only material to result in a completely dry cockpit was the 3M Sealer shown in use . . . one of more than 1,000 adhesives on file in 3M laboratories.

This ability to provide the right answer to the toughest adhesive jobs is bringing more and more manufacturers to 3M for solutions to their sealing and bonding problems. Our experience covers every type of industry and every type of adhesive use, including sealing, sound-deadening, insulating and protective coatings.

Why not call on us for help with any problem you may have? We'll be glad to assign an adhesive engineer to work with you on the problem. And we're sure the solution we find will cut your costs and produce a better job.

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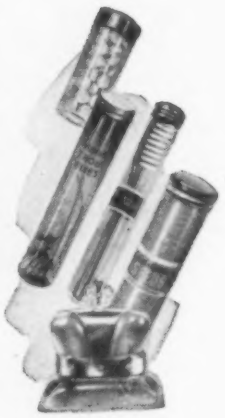
6 REASONS WHY IT PAYS TO BUY PLASTIC PACKAGING

(1) The transparency of glass *without breakage*. (2) lower transportation costs and conservation of space (⅕ weight of glass, no bulky packing material necessary), (3) produced in any size, shape, length, design or color (translucent or opaque), (4) seamless, (5) non-inflammable, (6) permanent label imprinted during manufacture. World's largest producers of plastic containers. Est. 1919. For free sample containers, literature, information, write Celluplastic today.



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PLASTIC VIALS, CAPSULES, BOXES AND SPECIAL CONTAINERS

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CUSTOM EXTRUSION AND INJECTION MOLDING

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40 Avenue L, Newark 5, N. J. New York office: 630 5th Ave.

more than

80

Oakite Materials to solve your cleaning problems

Among those Oakite materials are alkaline compounds to prepare surfaces for finishes by thorough soil removal. There are also acidic-type materials to remove scale, safely.

Others, solvents, for example, to remove pigmented greases and carbon deposits. Still others for steam-cleaning, deodorizing, chemical sterilization and rust-proofing.

All Oakite materials give effective cleaning . . . help keep per unit costs down. Phone, write or wire Oakite Products, Inc., 54 Thames St., New York 6, N. Y., for inplant help of the Oakite Technical Service Representative on your cleaning problems.

OAKITE

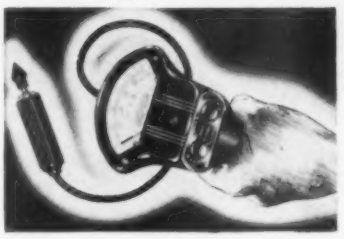
Specialized Industrial Cleaning

MATERIALS • METHODS • SERVICE

PRODUCTION LINE PRESS

30-TON combination shear and press known as the Multi-Max, is mechanically operated and shears, blanks, notches, punches, perforates, slots, pierces, lances, bends and forms sheet metal parts in single or multiple units, with one operator, it is claimed. It is said to need no special foundation, to have no overhanging parts and to require only 36" x 75" floor space. Stroke is 2", as is the ram adjustment. Literature available. *Parker Mfg. Co., 2200 Colorado Ave., Santa Monica, Calif.*

ELECTRIC HAND TACHOMETER



MULTIPLE range electric hand tachometers are for general purpose speed measurements in either revolutions per minute or feet per minute. With an accuracy of 1%, according to maker, three separate ranges are provided on a 100 division, 3½ inch scale. Type 25A has ranges of 200 to 2000 rpm, 500 to 5000 rpm and 1000 to 10,000 rpm. Type 25B for low speeds has ranges of 20 to 200 rpm, 50 to 500 rpm, and 100 to 1000 rpm. Range is selected by means of switch. Operating torque of the head is approximately 1/20 ounce-inch. *Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.*

OFFSET SINLEX STRAINER

OFFSET sinlex strainer is said to permit the strainer to be completely drained as the line itself is drained. With the inlet and outlet at right angles, the unit can be installed to form a right angle connection in a piping system. Cover is removable for lifting out the perforated strainer basket. Cleanout plug furnished to permit steam blow-down cleaning. Made in cast bronze, steel, semi-steel, or iron, or alloyed metals for corrosion resistance. Types available for working pressures from 125 to 300 lbs., in sizes from 1½ to 12". *J. A. Zurn Mfg. Co., Erie, Pa.*

(*Please turn to page* 174)

BOLTS ★ NUTS ★ SCREWS ★ RIVETS ★ WASHERS

Check These Advantages of Sterling Single-Source Buying

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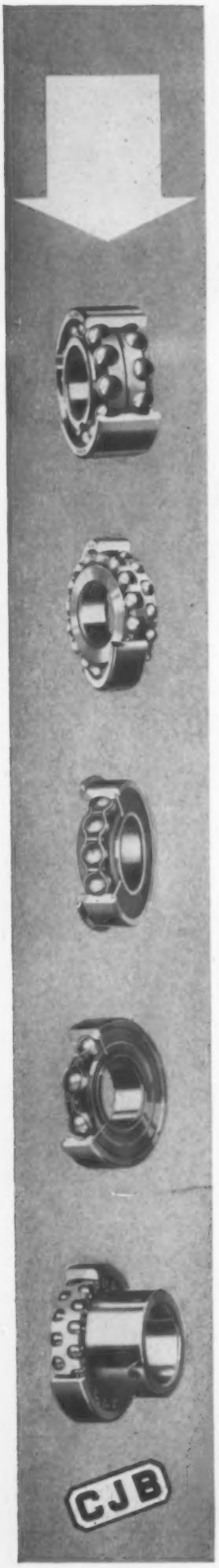


Each CJB AHLBERG BALL BEARING *is equipped with a MATCHED SET OF BALLS...*

Accurate to 25 Millionths OF AN INCH

The Balls in CJB Ahlberg Ball Bearings are hardened throughout—lapped and polished to mirror finish—accurate in sphericity to .000025". Each bearing contains a matched set of balls identical in size to .000025".

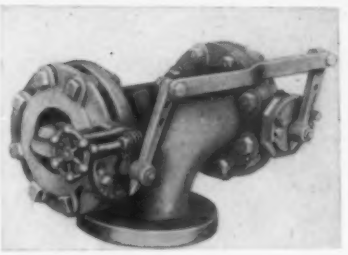
Whether the bearing is of deep groove construction for thrust capacity or the maximum ball type for extra radial capacity the balls are accurate to the "Nth" degree for smooth, quiet performance and long life. Without this extreme accuracy a bearing cannot be top quality.

Ahlberg Bearing Company, 3039 West 47th Street, Chicago 32, Illinois.

Ahlberg *Bearings* CHICAGO

BALL BEARINGS • ROLLER BEARINGS • PILLOW BLOCK

THREE-WAY BUTTERFLY VALVE

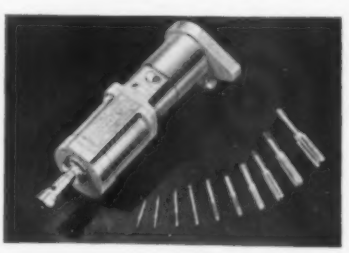


DEVELOPED for three-way operation, this butterfly valve consists of two butterfly valves and a tee, with the valves interlocked so that the closing of one vane opens the other in any proportion. The valve may be lever or hand wheel operated. For large pipe sizes, roller chain and sprocket connections are arranged so that one hand wheel or chain wheel closes one vane while opening the other. Automatic operation can readily be applied, maker states. Available from 4" to 60", American standard pipe flange sizes in cast iron or special alloys. *W. S. Rockwell Co., Fairfield, Conn.*

IMPROVED MASKING AND STOP-OFF TAPE

WRAP-RAX improved masking and stop-off tape is said to provide great thermal and chemical resistance. The tape may be rapidly applied after which it is heated to 330-325 F to insure adhesion at each lap of the winding, according to the maker. The tape has also been used without fluxing in cases where service conditions are not severe, it is stated. In either method, the tape is claimed to give complete protection in all kinds of electroplating and anodizing solutions. *Hanson-Van Winkle-Munning Co., Matawan, N. J.*

TAPPING HEAD



COMMANDER tapper can replace three conventional tappers, it is claimed, because it will handle taps from #0 to ¾". Designed to fit any drill press, the tapper employs a patented spring clutch drive that is said to eliminate the slippage and wear caused by misadjustment and misuse. The adjustable torque control, pre-set for the tap size, is said to permit the tap to move into and out of work with automatic sensitivity. The tapper is suited for cycle tapping and O. D. threading, as well as routine machine tapping. *Commander Mfg. Co., 4225 W. Kinzie St., Chicago, Ill.*

(*Please turn to page* 176)

FAST WORK

CAN BE EASY

Prove to yourself that Spang CW Pipe cuts fast and easy. Slip a pipe-cutter over a length of it . . . feel the cutter wheels dig in deeper with each swing . . . then note how they roll through this pipe in a hurry. The reason? Spang CW Pipe is made from easy-cutting steel that is remarkably free from time-stealing hard spots.

Speed your jobs with Spang CW . . . the pipe that's famous for these qualities:

• Easy to Cut, Bend, Thread or Weld • Uniform Lengths • Smooth Inside Surface • Sound Weld from End-to-End of Pipe • Accurate Threaded Ends • Accurate Size • High Concentricity.

In spite of shortages your dependable Spang distributor will do everything possible to speed delivery of your orders for Spang CW Pipe.

SPANG-CHALFANT

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EXECUTIVE OFFICES: PITTSBURGH, PA.

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SPANG CW

QUALITY *that is recognized wherever pipe is used*

How to SAVE SAFELY on

Let's lay the cards on the table.

First—How good does that particular spring really need to be? Are severe conditions of service to be the rule or the exception? Are close tolerances, rigid inspections really necessary? They add to costs.

Next—could it be designed some simpler way that would cost less to produce? Is special material necessary or will some standard spring material suffice? Has your spring maker the equipment best for your job? These and a dozen other factors affect the price of springs.

Let's work on it together. We have the skill, the experience, the facilities to really help.

●

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ILLINOIS COIL SPRING COMPANY SINCE 1928

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PLASTIC-FRAME SAFETY GOGGLE

AC 607 safety goggle with all plastic frame and a single plastic acetate lens is for wear directly over eyes or over spectacles for frontal protection against flying particles on jobs such as machine work, hand tool operations, laboratory work, light grinding etc. No metal touches the skin. The lens, in green or white, is replaceable. The metal temples, enclosed in acetate to prevent corrosion are said to be easily adjusted and hold the goggles snugly without irritation. *American Optical Co., Southbridge, Mass.*

WASH, RINSE & DRY MACHINE

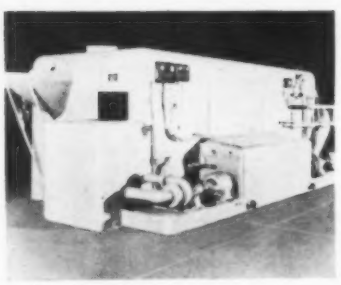

ILLUSTRATION shows combination drum and belt conveyor wash, rinse and dry machine with loading hopper into which parts to be cleaned are fed at left. Loading station for the belt conveyor parts is at right. Small miscellaneous parts are cleaned in the drum, larger and more delicate parts on the belt. Thermostatic control is provided for both the solution and the oven. Further information available. *Cincinnati Cleaning & Finishing Machine Co., Hecla St., Ironton, O.*

AUTOMATIC PRESSURE REGULATOR

THIS automatic vacuum and pressure regulator, known as the industrial Cartesian Manostat, Model #5, is said to operate on the physical principle of the Cartesian diver. It is described as requiring no complex electrical or mechanical systems or extra equipment. It has only to be put in any existing system, according to the maker, and set to maintain the desired pressure vacuum. It will maintain constant pressure or vacuum to within 1/10 of 1%, it is claimed. Bulletin ICM-96 available. *Emil Greiner Co., 161 Sixth Ave., New York, N. Y.*

(*Please turn to page* 178)

Put PEP in the STEP of your WATCHMAN with the CHICAGO WATCHCLOCK System and-

Reduce your INSURANCE COSTS

Here's a positive, tamperproof check on your watchman's activities. It's so positive and so revealing that insurance rates go down for "CHICAGO" users. In short, extra protection that pays for itself! . . .

Ask for Illustrated Details of the New SPARTAN Model A

CHICAGO WATCHCLOCK Corporation
The first — and still the first!
Offices in Principal Cities
1522 S. WABASH AVE., CHICAGO 5
For Over 60 Years

IF IT'S A FORGING

BILLINGS

OUR HAMMERS TALK PRODUCTION!... OUR FORGING ENGINEERS KNOW FORGINGS!...

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Hartford 1, Conn., U. S. A.

A BUYING GUIDE FOR ABRASIVES

ABRASIVE PROBLEM:
Is there anything NEW on Identifying, Specifying and Packaging Coated Abrasives?

ANSWER BY
CARBORUNDUM
TRADE MARK

The Carborundum Company has developed an entirely new and more convenient method of packaging coated abrasives. Based on a careful analysis of requirements and problems of both users and distributors, it facilitates use, handling, shipping and stocking of coated abrasives.

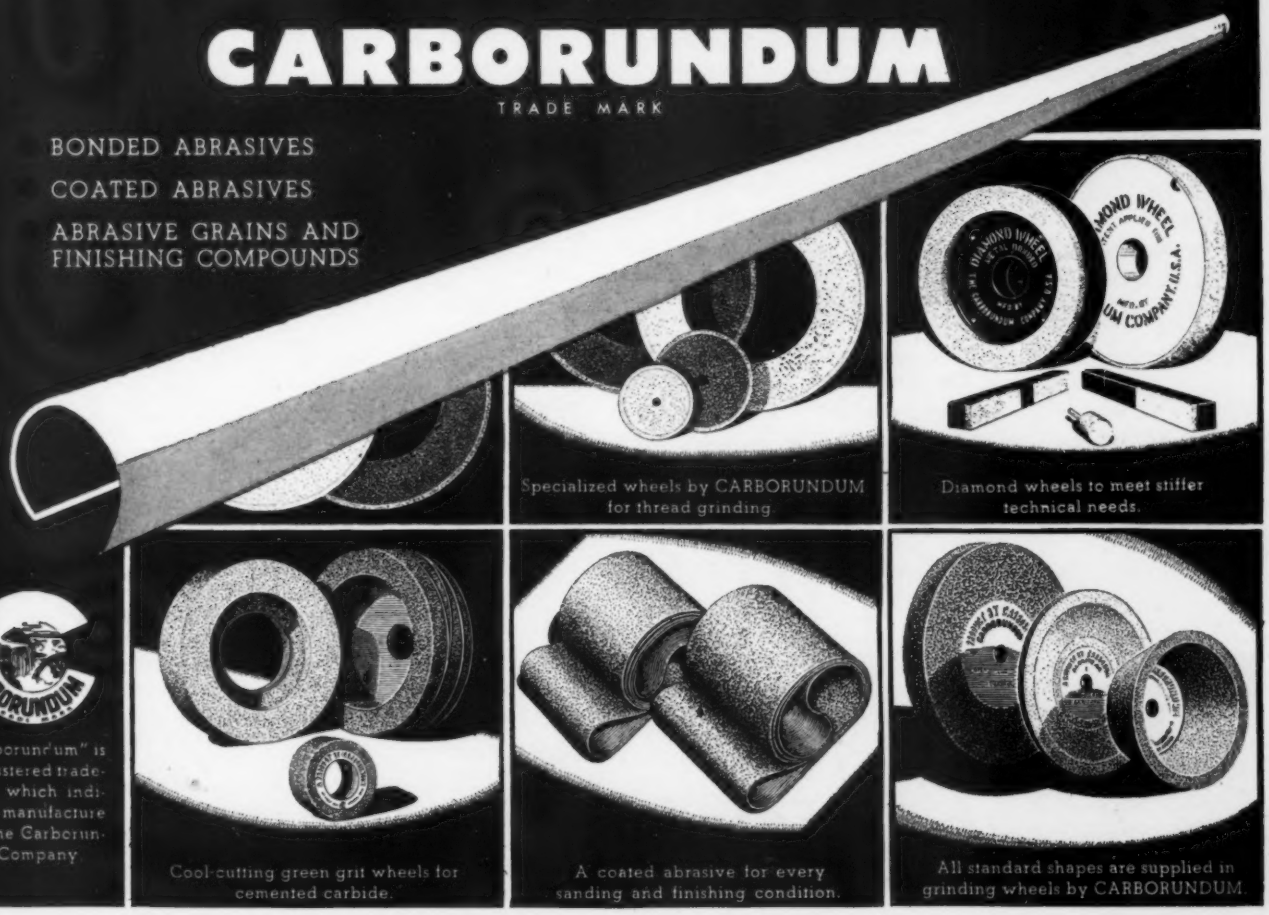
Under this new system, sturdy packages contain "decimal" quantities of 25, 50 or 100 sheets. Cartons replace paper wrappings. Standard units are emphasized. Products are clearly identified by their end-use name on labels and backing. Ordering is expedited. Pricing and inventory are simplified. Handling is easier. Cardboard sleeves protect against curling and tearing.

This interest in the problems of our customers is amply repaid in the increasing preference for products by CARBORUNDUM. The Carborundum Company, Niagara Falls, New York.

A Good Rule for Good Grinding ... CALL IN

CARBORUNDUM
TRADE MARK

BONDED ABRASIVES
COATED ABRASIVES
ABRASIVE GRAINS AND FINISHING COMPOUNDS



Specialized wheels by CARBORUNDUM for thread grinding.

Diamond wheels to meet stiffer technical needs.

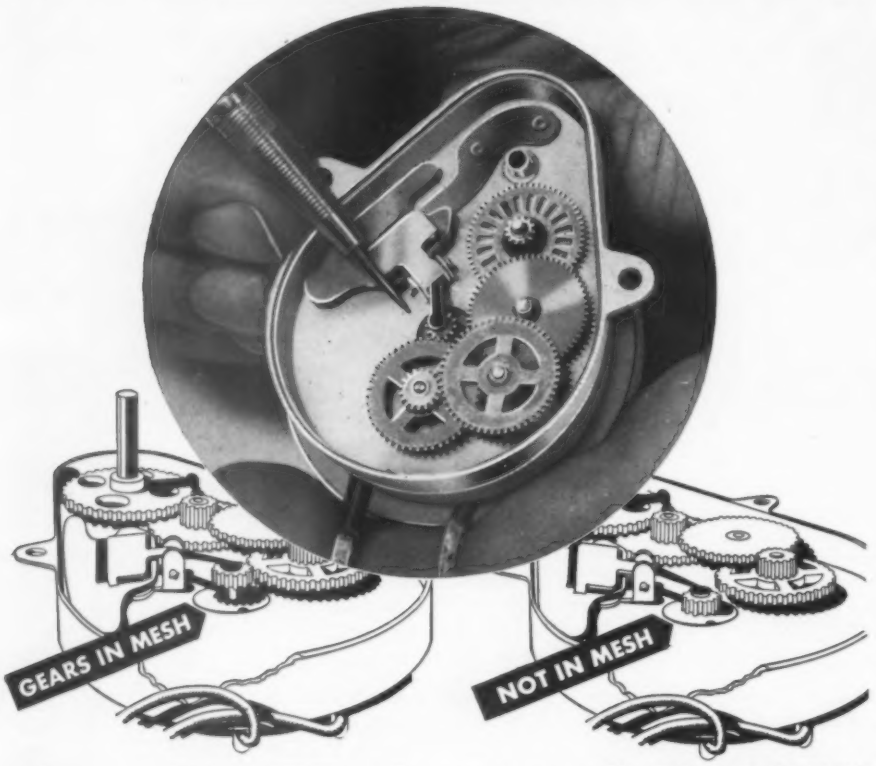
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company.

Cool-cutting green grit wheels for cemented carbide.

A coated abrasive for every sanding and finishing condition.

All standard shapes are supplied in grinding wheels by CARBORUNDUM.

For Automatic Reset Timing



the SHIFT is to HAYDON!

An automatic shift mechanism has been built into the Haydon 1600 series synchronous motor and gear unit by Haydon engineers, making possible immediate automatic resetting for devices such as time delay relays, process timers, interval timers, etc. The magnetic pull of the energized motor field is utilized to engage the gear train while the timing operation is in progress. A counterbalance in the shift disengages the gear train from the motor when the motor field is de-energized. The drive shaft is then free to be reset to its starting position by means of an external spring. Engaging and disengaging action is uniform in any position.

- **Available in speeds from 15 to 1/10 rpm.**
- **Information on this exclusive shift feature, and complete data on all Haydon synchronous motors and timers, is available in the new 1948 Engineering Catalog.**
- **If it's about time, request a demonstration of Haydon products at your desk.**

WRITE HAYDON, 2202 ELM STREET, TORRINGTON, CONN.

HAYDON

MANUFACTURING COMPANY, INC.
TORRINGTON CONNECTICUT
HARNESS TIME TO YOUR PRODUCTS
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION

TAIL GATE TRUCK LOADER

LIFT platform of illustrated tail gate truck loader operates over the full distance from ground to truck floor level, raising and lowering loads up to 1200 lbs. The platform remains level throughout travel arc, and swings up to serve as tail gate. The hydraulic pump is driven from the truck's standard power take-off and is controlled by a lever. The pump can also be operated with a hand lever. The unit fits most standard 1½-ton trucks, maker states, and takes only a few minutes to install. *Day Co., 306 W. 69th St., Chicago 21, Ill.*

ALL-METAL STEP LADDER

ALL - STEEL Cosco step ladder of tubular construction, has a wide-angle, "legless" base that will not slip, tip or wobble on any surface, or sink in soft ground, according to the manufacturer. Other features include: wide steps, each tested to support 1000 lbs., with embossed "traction tips"; self-locking brace that holds the ladder open or closed; collapsible work tray at top of frame and flanged on all sides. The ladder folds to a maximum thickness of 5½", and is built with 4, 5, 6 or 7 steps. *Hamilton Mfg. Corp., Columbus, Ind.*

HEAVY DUTY TIRE INFLATOR AND FIRE EXTINGUISHER

POWER-Pak heavy duty tire inflator and fire extinguisher unit is for use in industrial plants, garages and institutions. This model contains 2½ lbs. of CO_2 and is claimed to be an effective extinguisher for larger inflammable liquid, grease, oil, electrical and wood surface fires. It will also inflate a dozen average size passenger tires, maker states. The unit weighs 8½ lbs., and has a metal wall bracket. The cylinder, measuring 17" long and 3½" in diameter is said to conform with I.C.C. specifications. *Power-Pak Products, Inc., Buffalo 2, N. Y.*

(*Please turn to page* 180)

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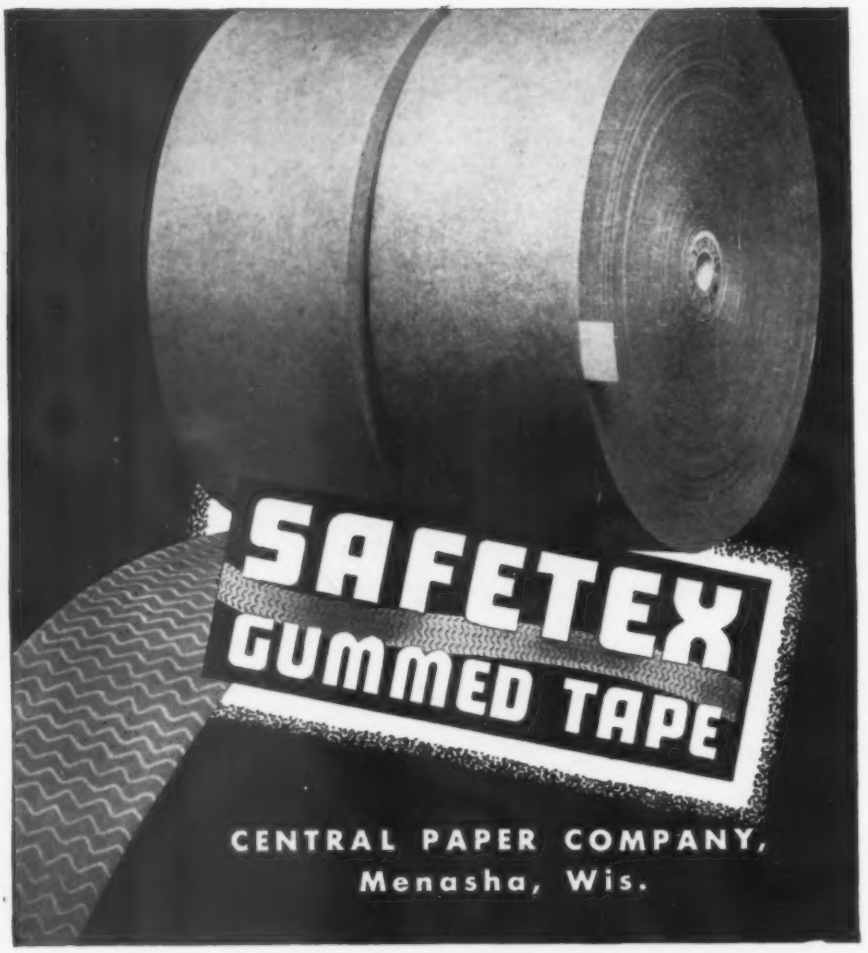
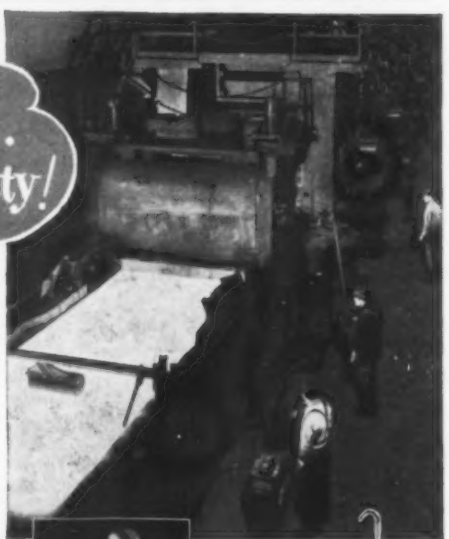
Right now, make a note of the name, address and phone number of the Alcoa Distributor nearest you, from the list above. Then, when you need Alcoa Aluminum Sheet, Shapes, Rod, Bar, Tubing, or Fastenings, get in touch with him to determine how best he can meet your needs under today's difficult conditions. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Bldg., Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALCOA ALUMINUM 1888 1948 60 YEARS OF SERVICE



Strenuous work... with maximum safety!



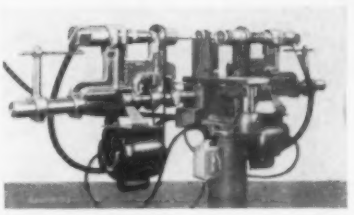
Today's modern steel plants protect their workers with every possible safeguard. One of the most important . . . the installation of Halsey Taylor Coolers and Fountains. In heavy industries or in light fabrication work, a dependable supply of fresh cool water is equally essential to the comfort and convenience of the workers. Get our latest literature on the Halsey Taylor line for office or plant!

The Halsey W. Taylor Co., Warren, O.

HALSEY TAYLOR
Coolers & Fountains

F-1

DOUBLE-END RIVETER



DESIGNED to rivet simultaneously both ends of a door hanger axle, as shown above, Airflex horizontal double-end riveter has many other applications. It is similar to standard vertical type with the exception that two frames are mounted on a horizontal bar with cable and pulley arrangements which operate both hammers simultaneously when the foot pedal in the base is applied. "Rotating impact" principle combines controlled straight line pneumatic hammer blows, with a fluted, rotating peen. Complete details available. *Lemert Engineering Co., 1200 N. Western Ave., Plymouth, Ind.*

SLIP-PROOF SYNTHETIC FLOOR COATING

"SAFETY GRIP", a synthetic-resin, brush-on or trowel-applied coating for factory floors and stairways, contains fine abrasives and is said to give slip-proof protection even when wet or oily. It is fire-resistant, hard and wear-resistant to Navy specifications, maker states. It can be applied to wood, metal, concrete, etc. and dries in 2 to 4 hours. It is described as not being affected by salt water, oil, grease and detergents, and most acids and alkalies. Literature available. *Permasol Synthetics, 66 W. 53rd St., New York, N. Y.*

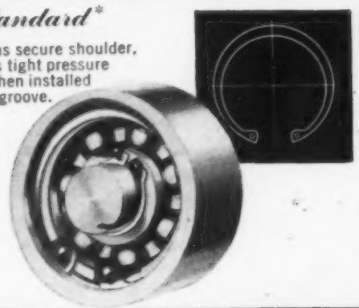
PRODUCTION SPRAY GUN

ILLUSTRATION shows the Model 18 high precision production spray gun that handles all types of finishes. The controls are located at the back of the gun. The spray pattern is adjustable from round to flat with all intermediate patterns. A hardened steel needle valve is adjustable to compensate for wear. The self-centering nozzle is designed on the tapered seat principle. All gun parts are made of wear and corrosion resistant materials. *Binks Mfg. Co., 3116-18 Carroll Ave., Chicago 12, Ill.*

(*Please turn to page* 182)

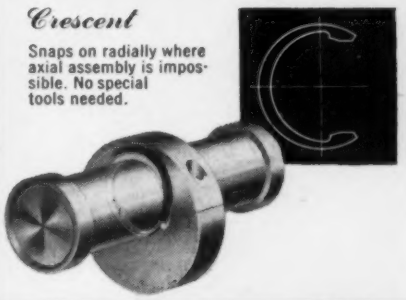
Waldes Truarc Retaining Rings Now Nationally Distributed, Nationally Stocked

*Standard** — Forms secure shoulder, gives tight pressure fit when installed in a groove.



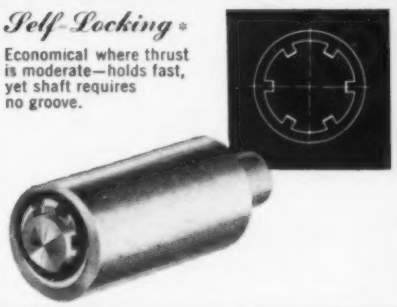
*Beveled** *and Bowed** — Take up end-play rigidly or resiliently, accommodate accumulated tolerances.

Crescent — Snaps on radially where axial assembly is impossible. No special tools needed.

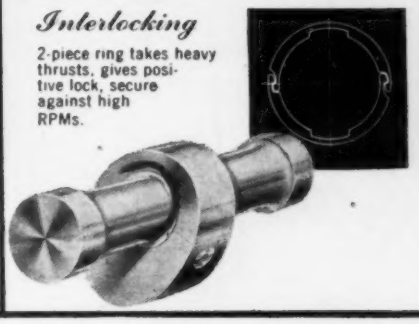


E-Ring — Provides large strong shoulder for small shafts. Applied radially.

*Self-Locking** — Economical where thrust is moderate—holds fast, yet shaft requires no groove.



Interlocking — 2-piece ring takes heavy thrusts, gives positive lock, secure against high RPMs.



*Inverted** — For bearings with large corner radii, uniform shoulder for curved abutting surfaces.

*Available for both internal and external application

There's a Waldes Truarc precision-engineered retaining ring to answer every need. Truarc rings give a never-failing grip because of their mathematically precise construction. No matter how demanding your specifications, it's a simple matter to refine your present designs to save material, machining and assembly costs. And now it's more convenient for you too—there's a distributor near you who stocks the rings you need. See the list below. Send your design problem to Waldes Truarc engineers, who will give it individual attention without obligation.

ONE OF THESE AUTHORIZED DISTRIBUTORS IS CONVENIENT TO YOU:

Akron, O., The Ohio Ball Bearing Co.
Albany, N. Y., Tek Bearing Co., Inc.
Appleton, Wisc., Wisconsin Bearing Co.
Atlanta, Ga., Moffatt Bearings Co.
Baltimore, Md., Moffatt Bearings Co.
Birmingham, Ala., Moffatt Bearings Co.
Bluefield, W. Va., W. Virginia Bearings, Inc.
Boston, Mass., Tek Bearing Co., Inc.
Bridgeport, Conn., Tek Bearing Co., Inc.
Buffalo, N. Y., Syracuse Bearings Co.
Canton, O., The Ohio Ball Bearing Co.
Charleston, W. Va., W. Virginia Bearings, Inc.
Charlotte, N. C., Moffatt Bearings Co.
Chicago, Ill., Berry Bearing Co.
Cincinnati, O., The Ohio Ball Bearing Co.
Cleveland, O., The Ohio Ball Bearing Co.
Columbus, O., The Ohio Ball Bearing Co.
Dayton, O., The Ohio Ball Bearing Co.
Decatur, Ill., Illinois Bearing Co.
Denver, Colo., Bearings Service Supply Co.
Detroit, Mich., Michigan Bearings Co.
Erie, Penn., Pennsylvania Bearings Inc.
Ft. Wayne, Ind., Indiana Bearings Inc.
Hamilton, O., The Ohio Ball Bearing Co.
Hammond, Ind., Berry Bearing Co.
Huntington, W. Va., West Virginia Bearings, Inc.
Indianapolis, Ind., Indiana Bearings Inc.
Ironton, O., The Ohio Ball Bearing Co.
Lafayette, Ind., Indiana Bearings Inc.
Lima, O., The Ohio Ball Bearing Co.
Lorain, O., The Ohio Ball Bearing Co.
Los Angeles, Calif., Edward D. Maltby Co.
Mansfield, O., The Ohio Ball Bearing Co.
Marion, Ill., Bearings Service Co.
Milwaukee, Wisc., Wisconsin Bearing Co.
Minneapolis, Minn., Industrial Supply Co.
Muncie, Ind., Indiana Bearings Inc.
New York, N. Y., Tek Bearing Co., Inc.
Newark, N. J., Tek Bearing Co., Inc.
Niagara Falls, N. Y., Syracuse Bearings Co.
Oakland, Calif., Bearing Specialty Co
Peoria, Ill., Illinois Bearing Co.
Philadelphia, Penn., Moffatt Bearings Co.
Phoenix, Ariz., Edward D. Maltby Co.
Pittsburgh, Penn., Pennsylvania Bearings Inc.
Portland, Ore., O. W. I. Corporation
Providence, R. I., Tek Bearing Co., Inc.
Richmond, Va., Moffatt Bearings Co.
Rochester, N. Y., Syracuse Bearings Co.
St. Louis, Mo., Neiman Bearings Co.
Salt Lake City, Utah, Bearings Service Supply Co.
San Francisco, Calif., Bearing Specialty Co.
San Diego, Calif., Edward D. Maltby Co.
Seattle, Wash., Bearing Engineering & Supply Co.
Shreveport, La., Bearing & Transmission Co.
South Bend, Ind., Bearings Service Co.
Syracuse, N. Y., Syracuse Bearings Co.
Terre Haute, Ind., Indiana Bearings Inc.
Toledo, O., The Ohio Ball Bearing Co.
Toronto, Ont. Can., Controlite Engr. & Sales Ltd.
Wheeling, W. Va., West Virginia Bearings, Inc.
Youngstown, O., The Ohio Ball Bearing Co.
Zanesville, O., The Ohio Ball Bearing Co.

Factory engineering representatives available in each area

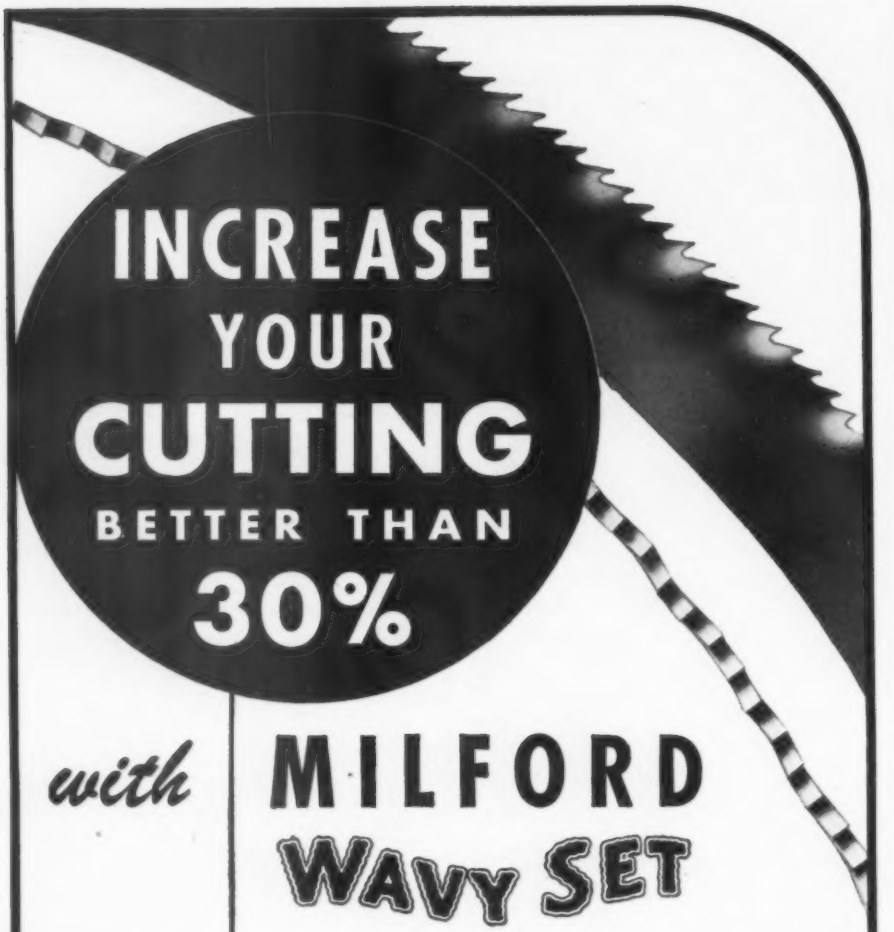
WALDES

TRUARC

RETAINING RINGS

WALDES KOHINOOR, INC.
LONG ISLAND CITY 1, N. Y.

WALDES TRUARC RETAINING RINGS ARE PROTECTED BY U.S. PATS. 2,302,948. 2,036,454 2,416,852 AND BY OTHER PATS. PENDING.



INCREASE YOUR CUTTING BETTER THAN 30%

with MILFORD WAVY SET BAND SAW BLADES

YOUR OWN MACHINES ARE YOUR BEST PROVING GROUND

TEST A MILFORD WAVY SET BLADE against the field!

Yes . . . it's true . . . enthusiastic users tell us that 30% increased production on horizontal and vertical cut-off band saw machines *is conservative.*

These blades of unique design eliminate ripping of teeth . . . and cut with greater precision and closer tolerance. One pitch, 10-tooth blades can be used for cutting bar stock, angles and pipe.

Available in the ¾" 10 and 12-tooth sizes for immediate shipment.

Now individually packed in cartons for ease in handling

Your Industrial Supply Distributors are always ready to serve your needs for all factory and mill supplies as well as MILFORD WAVY-SET and other blades. Order through them.

MILFORD PROFILE AND BAND SAW BLADES RESISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively for Over 70 Years

NEW HAVEN 5, CONNECTICUT, U. S. A.

PLAIN HYDRAULIC CYLINDRICAL GRINDING MACHINE

PLAIN hydraulic cylindrical grinding machine is made in three different types: Type F plain swings 14" and 16" work weighing up to 6500 lbs. Length between centers ranges from 36" through 48", 72", 96", 120", 144", to 168"; Type FF will carry work weighing up to 10,000 lbs. between centers, and in swings of 16", 20" or 24", and may be had in various lengths up to 240" between centers; Type FR machine is made in 16", 20" and 24" swings and includes built-in crowning and concaving mechanism. Additional data available. *Landis Tool Co., Waynesboro, Pa.*

BRINELL TESTING MACHINE

MODEL KDR Brinell testing machine is said to be capable of checking up to 800 pieces per hour and of parts varying in diameter and thickness as much as ¾" without moving the elevating screw. The machine is motor-driven, hydraulically operated and constructed so that it is impossible for the operator to remove the specimen before the full load has been applied to the penetrator. It is equipped with a comparator indicator. Throat opening is 6" and maximum vertical opening is 14". *Steel City Testing Machines Inc., 8843 Livernois, Detroit 4, Mich.*

INDUSTRIAL HUMIDIFIER

WALTON industrial humidifier which requires no steam, no pumps, no compressors and is noiseless has a completely covered lower pan. The air is brought in from the bottom through a fibre-glass filter. This equipment is said to be calculated to save 90% of the cleaning time. The unit is equipped with hanging brackets. No return waterline is needed. Automatic controls for close regulation of percentages of relative humidity are supplied. Literature available. *Abbeon Supply Co., 58-10 41st Drive, Woodside, N. Y.*

(*Please turn to page* 184)

can STAINLESS STEEL WIRE SCREEN... *Your* CORROSION PROBLEM?

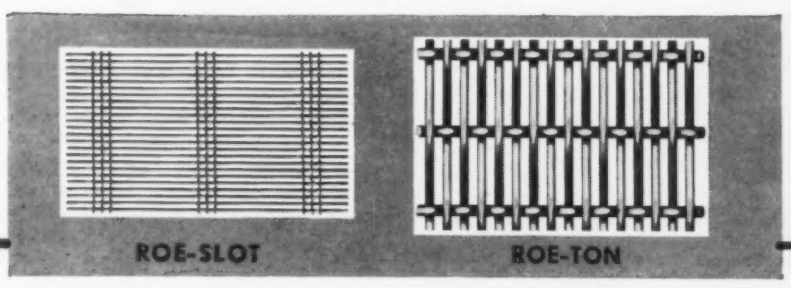
STAINLESS STEEL IS NOT A CURE-ALL, but it's the *perfect solution* for most corrosion problems. In thousands of applications where corrosion quickly destroyed other types of screens, Roebling Stainless Steel Wire Cloth has stopped the need for premature replacements.

Roebling Stainless Steel Wire Screen is precision-woven and its uniformity holds firm. Its smooth surface greatly reduces any tendency to clog. All in all, it brings greater screening accuracy, less need for re-processing, and increased production.

Whatever your screening requirements, there's a Roebling Stainless Steel Cloth of the right wire size and weave. Your Roebling Field Man will be glad to help you make the right selection. Call him at our nearest branch office.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

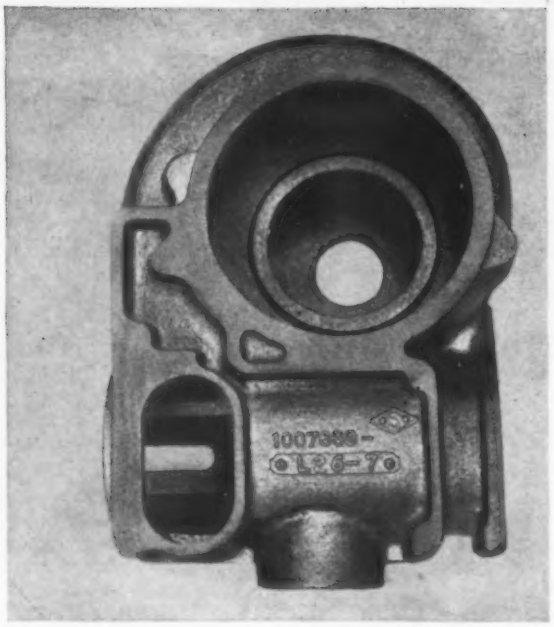
WIRE ROPE AND STRAND ★ FITTINGS ★ LAWN MOWERS ★ SUSPENSION BRIDGES AND CABLES ★ AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS ★ AERIAL WIRE ROPE SYSTEMS ★ ELECTRICAL WIRE AND CABLE ★ SLINGS ★ HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL ★ SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH ★ SKI LIFTS



JR ROEBLING

ROEBLING

A CENTURY OF CONFIDENCE



Can You Name it?*

Another name might be the
PRODUCTION CASTING OF THE MONTH

SUPERIOR FOUNDRY OF CLEVELAND, OHIO

will show you monthly an outstanding example of production castings...

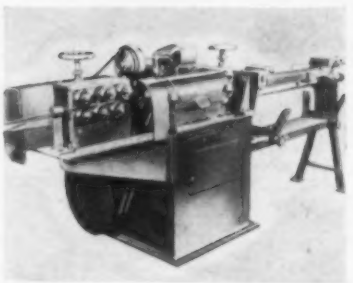
that our modern and completely staffed and equipped Foundry turns out regularly for satisfied customers. They know that it saves them time, money, and production headaches to always bring their casting problems to

SUPERIOR

SUPERIOR FOUNDRY, INC.
3542 EAST 71st STREET • CLEVELAND 5, OHIO
MICHIGAN 3078

* If you called it a Blower Housing, take a bow! This casting is made of uniformly close grained, easily machineable gray iron.

WIRE-STRAIGHTENING AND CUT-OFF MACHINES

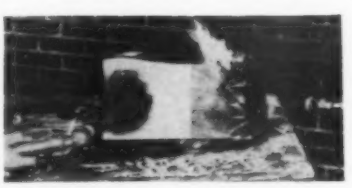


TEN thousand or more pieces of wire per hour may be straightened and cut on the Wiro Matic wire-straightening and cut-off machines, according to the manufacturer. Each machine accommodates various wire sizes. Among accessories manufactured is a wire reel that handles wire without lifting by the operator. Printed matter available. *Dore Mfg. Co., Grayling, Mich.*

DEMOUNTABLE AUTO BATTERY

NUFORM demountable automobile battery can be taken apart, repaired and reassembled with a pair of pliers in 15 minutes, and is backed by a 10-year bonded guarantee, according to manufacturer. It contains no hidden sealed parts and can be completely disassembled into its components. Cushion suspension of plates from the covers of the cells is said to prevent injury from shock and vibration. Leakage, corrosion and sulphation around terminals are eliminated by design and construction, manufacturer claims. *Associated Battery Assemblers, 7900 South Vermont Ave., Los Angeles 44, Calif.*

FIRE RESISTANT FINISHES



FYR-KOTE finishes are said to be a combination of fine paint with fire-retardant chemicals that protect the inflammable wood fibres beneath the surface, confining and retarding flames. Under prolonged, intense heat, the surface merely blisters or scorches, it is claimed. According to the maker, the finishes resist fire in three ways: a chemical reaction releases carbon dioxide; a tough fusion film forms to reduce heat and oxygen reaching wood fibres; a non-inflammable resin base is used. *Fyr-Kote Co., 1823 Washington Ave., St. Louis, Mo.*

This huge aircraft plant, roofed and sided with "Century" Asbestos Corrugated, will withstand a lifetime of service without maintenance or deterioration.

ASBESTOS IN ACTION

"Century" Asbestos Corrugated is easy to drill and cut on the job.

WHAT OTHER SHEATHING MATERIAL GIVES YOU ALL THESE ADVANTAGES?

If you're planning some new industrial construction, or remodeling, it will pay you to look into the advantages of K&M "Century" Asbestos Corrugated. Compare these features with those of any other roofing and siding material:

1. FAST, ECONOMICAL CONSTRUCTION—19 available sheet sizes speed up installation. New "Topside" fasteners eliminate costly scaffolding on roof jobs, as *all* fastening can be done from atop the roof's surface.

2. STRUCTURAL STRENGTH—"Century" Asbestos Corrugated withstands severe stresses, such as snow loads, other common conditions.

3. IMMUNITY to fire, weather, rust, corrosion, galvanic action. Being made of asbestos and cement, "Century" Corrugated cannot fall victim to these damaging forces.

4. ATTRACTIVE APPEARANCE—pleasing light gray color provides attractive, modern appearance . . . banishes that forbidding "gloom" so characteristic of many industrial plants in the past.

5. FREEDOM FROM MAINTENANCE—"Century" Asbestos Corrugated never needs painting, is highly resistant to oil, acids, brine, other destructive agents.

•

Truly, here is the material adapted to today's industrial construction needs. You'll find it ideally suited to the job you have in mind. If you'd like to know more about it, just write us—we'll give your inquiries prompt consideration.

Nature made Asbestos
Keasbey & Mattison has made it serve mankind since 1873

K&M best in asbestos

Reg. U. S. Pat. Off.

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COMPANY • AMBLER • PENNSYLVANIA

1 **AIRCRAFT PRODUCTS: AN Bolts, Nuts, Screws, Studs, Cotters (including Stainless Cotters)**

2 **SEMS—Pre-assembled Screw and Lockwasher units**

3 **SPECIALTY NUTS, including cone, barrel, plier, oblong, Tri-Slot, half-round**

4 **BICYCLE PARTS, from axles and saddle bolts to chain-adjusting screws**

5 **FURNITURE BOLTS, Skein Nuts, Cabinet Bed Bolts and Bed Screws**

6 **MILLED STUDS in a full range of sizes**

7 **DARDELET RIVET-BOLTS with the locking thread . . . time savers for steel construction**

8 **WEATHER-TIGHT Bolts—*modern* fasteners for wood assemblies—eliminate counterboring**

9 **PHILLIPS and CLUTCH RECESSED HEAD Machine Screws and Sheet Metal Screws**

10 **PLACE BOLTS—for locking assemblies rigidly**

11 **"1035" SET SCREWS of hi-tensile heat-treated steel**

12 **ROAD MACHINERY and other heavy equipment parts—high tensile and alloy fasteners**

13 **COTTER PINS of steel, brass, aluminum and stainless steel**

14 **LAMSON LOCK NUTS—One-piece, all-steel—can be re-used repeatedly**

15 **PLASTIC INSERTS—made to your specifications . . . in production quantities**

16 **"BENT" Bolts, including U Bolts, J, L, Hook and Eye Bolts**

17 **WIRE ROPE CLIPS with the new Hi-Center Saddles and extra-strength U Bolts**

18 **PIPE PLUGS, square head and headless; forged steel, heat-treated**

19 **LOK-THRED STUDS—Thread lock and seals in standard tapped holes**

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COMPANY _____

ST. & NO. _____ CITY (Zone) STATE _____

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1971 West 85th Street • Cleveland 2, Ohio

DON'T FORGET! Check the numbers on this coupon which correspond to the numbers of the fasteners above on which you wish more information.

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20 **"BOLTS, NUTS & SCREWS"**—a compilation of important technical articles on the manufacture, inspection, specification and use of fasteners; order from The Lamson & Sessions Co. at $1.50 per copy.

21 **"BOLT, NUT & RIVET STANDARDS"**—a complete and up-to-date standards book on commercial fasteners. *Available only* from the American Institute of Bolt, Nut & Rivet Manufacturers, Hanna Bldg., Cleveland, Ohio. $2.00 per copy.

• CAI … OTTER PINS • SEMS • KEY BOLTS • CHAIR and LAD …
…LONG NU… SHEET METAL SCREWS • MACHINE SCREWS • STOVE …
…ATOR BOL… PRESSED and COLD PUNCHED NUTS • SKEIN NUTS • …
…FIN HEAD … • CAPPED NUTS • SLEIGH SHOE BOLTS • STO…
PINS • … …LACE BOLTS • MARSDEN NUTS • SELF-TAPPING SCREWS • FITTING-UP BOLTS • U BOLTS • …

may we "Butt in" on your Blueprints and perhaps solve your Fastener Problems?

LAMSON LOCK NUTS

YOU have high hopes for that new product of yours. It has what it takes to succeed in a big way. Utility, sales appeal and it's priced right. Your engineers and designers have seen to that.

But how are you going to assemble it most efficiently? What *types* of nuts and bolts and screws will do the job *right* . . . and at *lowest cost?* For instance, will you be able to use so-called "STANDARD" fastenings . . . types that are used on thousands of other products? Or will your new product require one or more "SPECIAL PURPOSE FASTENINGS" . . . such as the all-steel, one-piece Lamson Lock Nut illustrated above, or one of the products on the opposite page?

Choosing the proper fasteners for a product is an exact science in itself. It takes a whale of a lot of "know how" to select, out of the thousands of fasteners available, the particular one which meets all your requirments economically.

Whenever you are faced with a problem involving the proper choice of bolts, nuts, screws or allied products, LAMSON & SESSIONS invites your inquiry, without obligation. As one of the largest bolt and nut manufacturers in the United States, backed by 81 years' experience in the industry, we are in an excellent position to solve your fastener problems quickly—in fact, the answer may already be in our files.

THE LAMSON & SESSIONS COMPANY

General Offices: 1971 West 85th Street, Cleveland 2, Ohio

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SPECIAL PURPOSE

Lamson + Sessions

FASTENERS

FURNITURE BOLTS • SEMI-FINISHED NUTS • LAMSON LOCK

BOLTS • ELEVATOR BOLTS • STOVE RODS • TRACTOR BOLTS

• SPRING CENTER BOLTS • HUB and WHEEL BOLTS • CONNECTI

NUTS • BARREL NUTS • OBLONG NUTS • CABINET BED BOLTS

PLASTIC INSERTS • EYE BOLTS • CLEVIS PINS • HINGE PINS •

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APPING

• WEATHER-TIGHT

ILLIPS SCREWS • CAP SCREWS • FIN HEAD B

Silver Bond

flashing new addition to a famous line
CHICAGO WHEEL & MFG. CO.
Headquarters for
MOUNTED WHEELS and SMALL GRINDING WHEELS

• Here's a sensational grinding wheel . . . it's the startling, shining SILVER BOND, engineered for super-swift performance, unprecedented efficiency in grinding and finishing; kept constantly FRESH by a protective metallic film! Try it yourself! Stronger than words is the proof you will see for yourself, in your own plant, that the new SILVER BOND is the wheel you can't afford to pass by, the wheel that solves your grinding problems. Tell us the kind of job you have. We'll send a test SILVER BOND promptly.

Send for catalog of complete Chicago line.

MOUNTED WHEELS, the largest assortment available
• GRINDING WHEELS
• HANDEE Tool of 1001 Uses
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Dept. PG, Chicago 7, Ill.

☐ Send Test Wheel for use on .....
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Name .....

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CLEVELAND TWIST DRILL DEDICATES FIVE PATENTS

The Cleveland Twist Drill Co., as a gesture of good will to the metal-working industry, has dedicated to the public five of its patents covering tools embodying hard non-ferrous metal inserts such as may be formed of tungsten carbide.

This dedication covers the following patents: Re. 19,182 Drill and Like Instrument and Method of Making Same; 1,887,372, Cutting and Forming Tools; 1,887,373, Reamers and the Like; 1,887,374, Drill; 1,977,845, Cutting and Forming Tools, Implements and the Like, and Method of Making Same.

LARGE PLASTICS PART FROM SYNTHETIC POWDERS

The largest plastics product ever molded from synthetic powders was fabricated recently in the plant at Meriden, Conn.

This new permanent waving machine features a one piece urea plastics housing especially designed for utility, durability, and beauty.

The product is the housing for a new permanent waving machine made by The Nestle-LeMur Company of the same city. The housing itself weighs 10 pounds. It is 21 inches long, 18 inches deep and 10 inches high and was produced from a steel mold weighing nearly three tons. G. E. says that more than half a ton of metal was removed from the original steel block to form the cavity for the huge mold.

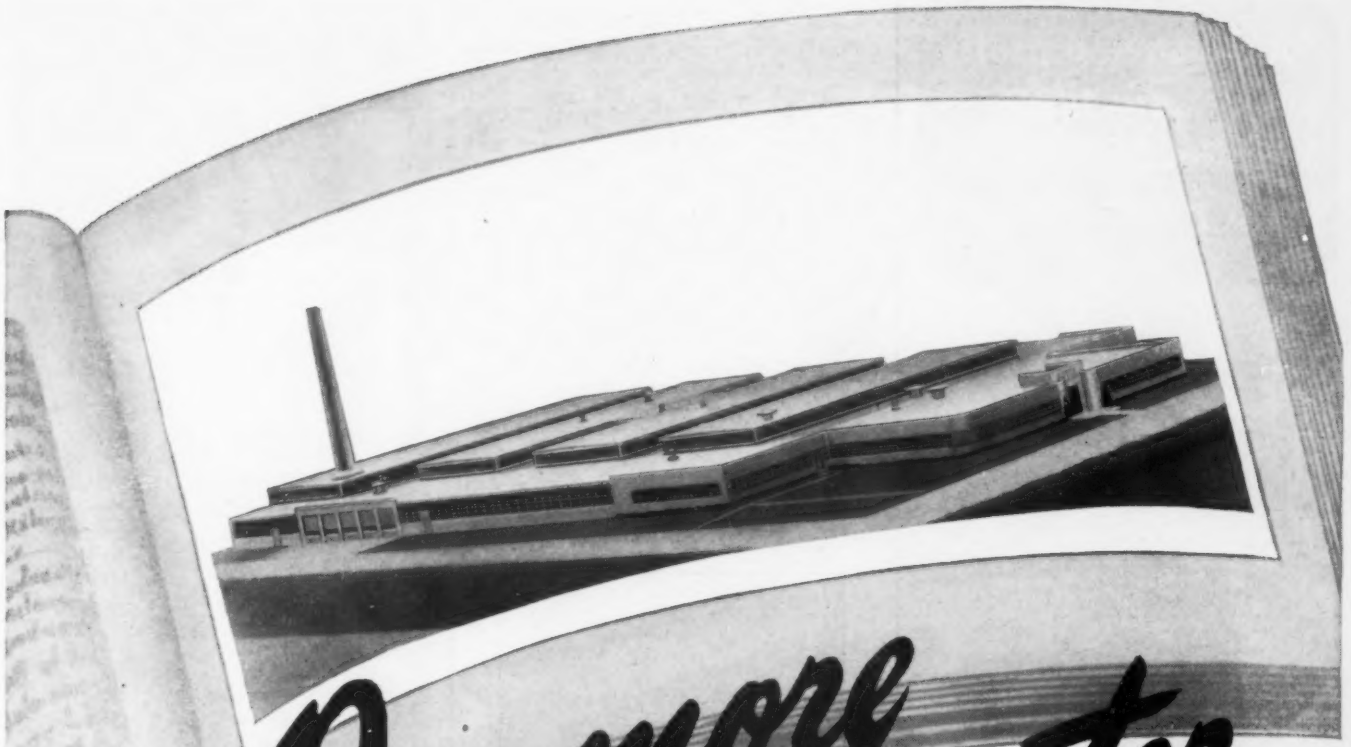
The plastic used was urea formaldehyde—in a neutral ivory shade suitable for any decorative color scheme used in beauty shops.

NEW MOTOR FOR LOW-COST POWER

Introduction of a compact lightweight stationary motor for light industrial applications and other uses has been announced by the Graham-Paige Motors Corp., York, Pa.

Known as the "Frazer," the engine is a five horsepower, two-cycle single cylinder gasoline type with impulse coupled magneto for easy starting. Extremely

(*Please turn to page* 190)



One more chapter

. . . in the story of an exacting job well handled!

The exacting job we refer to is making the kind of pressure gauges needed in every phase of industry. We have made this *our* job, and we have handled it so well that the resulting preference accorded Marsh instruments has built a volume of business which called for this new, modern plant at the North edge of Chicago, in Skokie, Illinois.

Marsh alone has the "Recalibrator" — quickest and best way to correct a gauge that has been knocked out of adjustment by improper handling.

We have built this plant on the bed rock foundation of more than 80 years of instrument making, but we have taken full advantage of the opportunity of building anew. Thus, we have put into it every available tool of production to expedite and amplify the methods and facilities and craftsmanship which have made Marsh instruments "The Standard of Accuracy."

There are new facilities here for carrying out the many extra steps that have contributed so much extra value to all Marsh instruments—new facilities for the testing of materials, for the gauging of component parts, for the final testing of every Marsh product.

Yes, the finest of pressure gauges are being made still better in the new Marsh plant. Insist on Marsh accuracy and stamina when you select pressure gauges—or equipment requiring gauges.

Between you . . . and trouble

It takes a pressure gauge to tell you what's going on inside that boiler, tank, compressor, pump or similar equipment — and a good one to tell it right. Those who know pressure gauges best, insist on Marsh instruments . . . well confirmed by the preference accorded Marsh gauges as original equipment by manufacturers of boilers, hydraulic machinery, compressors, refrigeration equipment, food processing machinery, and equipment for the petroleum industry.

JAS. P. MARSH CORPORATION, Dept. G. Skokie, Illinois

Jas. P. Marsh products include: A full line and range of gauges in pressure, vacuum compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam and hot water heating specialties. Ask for literature.

MARSH GAUGES

"THE STANDARD OF ACCURACY"

"you'll save a pretty penny with these — STRONG, ABSORBENT kraft paper towels"

Cut waste in your washroom with these tough, yet gentle towels that provide better service at lower cost — and less waste because one towel takes the place of two!

Straubel
TOWELS & TISSUE

STRAUBEL PAPER CO. • GREEN BAY, WIS.

(*Continued from page* 188)

economical in operation, it will run from six to eight hours on two gallons of gasoline, depending on the amount of work performed, it is said. It is recommended for small electrical plants and plumbing systems, for operating saws, hammer mills, concrete mixers, air compressors and other machines and for small machine shops, light manufacturing operations and similar applications.

Mounted on a metal base plate and fitted with a V-belt pulley power take-off, the engine occupies less than three square feet of floor space

HUGE LEATHER BELT

Shown partly completed on press in Philadelphia belt shop of E. P. Houghton & Co., is three-ply Vim leather belt 72" wide and 106' long, designed for power transmission in a Chicago steel mill. The belt is almost 9/16" thick, and almost 200 steer hides were used in its production.

FLUID SOLUTION OF "SAND" COMBINES WITH OTHER MATERIALS

A new fluid solution of "sand", having a number of unique chemical and physical properties—"Ludox" colloidal silica —has been announced by E. I. du Pont de Nemours and Company, Wilmington, Del. According to the company, experiments have shown that it combines with many other materials, and serves to strengthen them.

"Ludox", now available in small commercial quantities, may be eventually employed to advantage in the manufacture of many articles, according to the announcement. Among those metioned are elastic thread for many types of apparel; rubber sponge for mattresses and upholsteries; and to produce better wearing textiles. It may be used to improve the cements used in shoe manufacture, to treat paper, in leather dressings and in the compounding of rubber.

The solution contains the elements of common sand in a relatively high state of purity, and in a highly subdivided form, dispersed in water. The silica particles less than one-millionth of an inch in diameter are prepared by a new patented process. It affords a means of modifying many other materials to utilize the inherent properties of silica; namely mechanical strength, resistance to atmospheric and chemical agents, and resistance to heat.

(*Please turn to page* 192)

MAGNOLIA BEARING METALS

Bearings Wear too Fast?
Repour next time with one of the MAGNOLIA BEARING METALS.
Lead-base alloys have a much lower coefficient of friction than any other bearing metal—*1/3 that of "genuine" babbitt.*
The graphite treatment insures partial self-lubricating.
Ask your dealer—or us—for bulletin with tips on pouring.

Look for the
Flower Trade Mark

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The
PURE OIL COMPANY
U.S.A.

A Complete Line of Industrial Petroleum Products

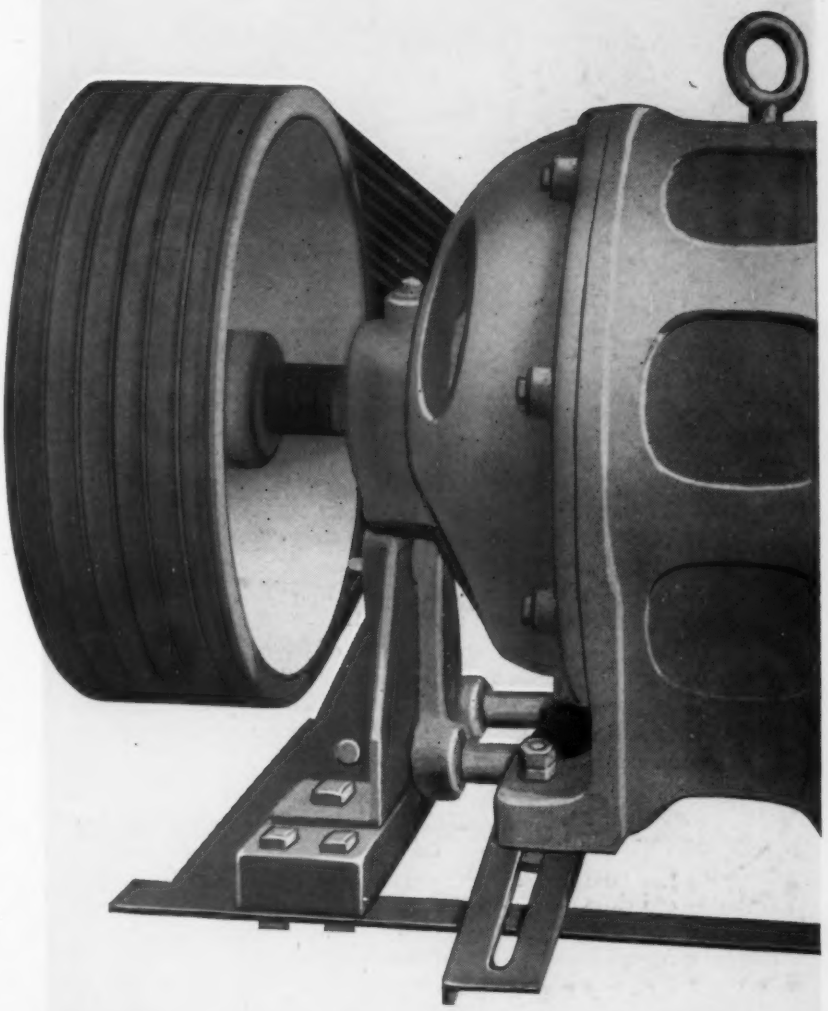
A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

Be sure PURE with Pure

HOW TO TRIPLE THE LIFE OF *Your V-Belts!*

Real savings in time, money and labor like this can now be yours—thanks to *automatic* control of belt tension. By taking advantage of the torque reaction of the motor, American Econ-o-matic Drives instantly, *accurately* match belt tension to the load. As the load steps up, the motor rocks back in its cradle-type mounting and belts tighten. When the load decreases, belt tension is automatically reduced. Costly belt slippage is eliminated, bearings and belts last longer, and operation is smoother, more efficient. And think of the *extra* savings you get—over and above lower belt and bearing costs—through higher, steadier production, less down time for replacements!

Decide today to put the real, money-saving advantages of American Econ-o-matic Drives to work. For complete specification and installation data, write for the American Econ-o-matic Drives Handbook. Drop us a line, today.



V-Belts had to be replaced every 60 days, bearings every 90 days—*before* the installation of an American Econ-o-matic Drive on this mill for grinding clay. Then, during the first 6 months of operation, belt and bearing replacements were entirely eliminated—resulting in a $90.00 saving in belt costs alone!

The American Pulley Company

4286 WISSAHICKON AVE., PHILADELPHIA 29, PA.

When you're faced with shortages, need equipment parts, or must ship finished products to meet contract dates — use the speed and handiness of Air Express and your worries are over. Air Express is the fastest possible way to ship or receive; cuts days off shipping time.

Air Express goes on all flights of the Scheduled Airlines — with air speeds up to 5 miles a minute. Special door-to-door service (no extra cost!) speeds up your shipments still more. Use the speed of Air Express regularly. Rates are surprisingly low.

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- Air-rail between 22,000 off-airline offices.
- Direct air service to and from scores of foreign countries.

True case history: Machine parts made in Camden were needed in Chicago. 32-lb. package picked up 11 A.M. the 28th, delivered 5 P.M. same day. 669 miles, Air Express charge only **$6.88.** Gave days more time to complete the job. Other weights, any distance, similarly inexpensive and *fast*. Just phone your local Air Express Division, Railway Express Agency, for fast shipping action.

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Rates include pick-up and delivery door to door in all principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE

SCHEDULED AIRLINES OF THE U.S.

FIRESTONE MAKES SPECIAL SNOW-AND-ICE PLANE TIRES

Special-purpose snow-and-ice tires for use on cargo planes flying the Alaskan-Aleutian aerial supply line are being made by the Firestone Tire and Rubber Co., Akron, O. The tires are said to enable the planes to keep American far northern bases supplied regularly throughout the winter months.

Imbedded in the tread rubber of the tire shown above are almost 8,000 spring steel wire coils, each ½ inch long and ¼ inch in diameter. The coil springs bite into snow and ice on runways, enabling big planes to brake safely to a stop. A 15.50 x 20 tire, it is made with nylon plies, has a 14-ply rating, and weighs approximately 152 pounds.

* * *

ROT-PROOF WATERPROOFING MEMBRANE WOVEN OF FIBERGLAS YARNS

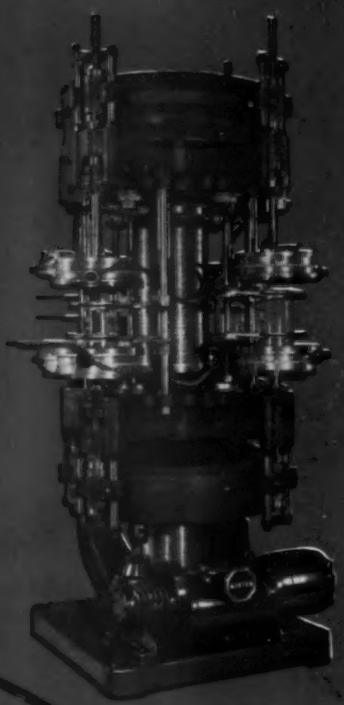
An inorganic, rot-proof waterproofing membrane consisting of an open-mesh fabric woven of Fiberglas yarns, is announced by the Lexington Supply Company, Cleveland. The basic Fiberglas yarns are manufactured by Owens-Corning Fiberglas Corporation.

The membrane is designed for roofing applications, for waterproofing brick or concrete walls above or below grade, and for many other waterproofing jobs in the construction industry. The open mesh permits full impregnation by the waterproofing compound. The impregnated fabric adheres firmly to rough or irregular surfaces, molding itself to the contours.

Since the life of any waterproofing application is only as long as that of the membrane, the fact that the glass yarns cannot rot is a major consideration. Of equal importance is the imperviousness of the glass yarns to charring or burning when hot coal tar and asphalt bitumens are mopped on. Since glass cannot absorb moisture, the glass fibers do not conduct moisture into the waterproofing compound or serve as wicks to permit escape of the volatile oils essential to durability. Thus, the use of glass yarns extends the life of the application.

The new-type membrane is sold by Lexington Supply Company under the trade name "Glasfab." Glasfab has a strength factor with the warp of 64 pounds per inch-wide strip, and 92 pounds with the fill per inch-wide strip. Thread count is 24 threads per inch for both the warp and the fill.

(*Please turn to page* 194)



On thousands of applications, stepless variable speed operation assures exactly the right speed for every operation . . . for each operator . . . the right speeds for each change in the consistency or shape of the material being processed. Such variable speed operation pays off in higher rates of production, a better quality product and more efficient performance of your equipment and your operators.

variable speed operation doesn't cost

IT PAYS

Master Speedrangers provide this infinitely variable speed in compact, all-metal, mechanical variable speed units in a wide range of types and sizes.

For example, see how the Speedranger on this plastic forming machine incorporates an electric motor, a variable speed unit and a gear reduction . . . all standard Master units that easily combine into a compact, integral power package. This provides exactly the right speed, the right features, in a unit that you can use right where you want it.

Write for Data 7525, a new 24-page book on Speedrangers, and see what a real job they can do for you.

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For most economical production machine sawing pick the long-lasting GRIFFIN SPECIAL ALLOY molybdenum high speed steel blade . . . For cutting hard alloys, pick the GRIFFIN HIGH SPEED STEEL blade of 18-4-1 tungsten . . . For hand sawing thin sheet, tubing, conduit, etc. without tooth breakage, the GRIFFIN NON-STRIP . . . For precision contour sawing, a GRIFFIN BAND SAW, made in four metal- and wood-cutting types.

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A heading machine cutting sections from heated steel rods and compressing them in a die to a rough spherical shape.

The steel is carefully chosen and inspected, even before it gets to the heading machine. After being "born" here, balls are carefully "brought up," through a long series of grinding and lapping operations, to the unbelievably high standards of finish, sphericity and precision which have made Strom Metal Balls the standard of Industry. Strom Steel Ball Co., 1850 South 54th Avenue, Cicero 50, Illinois.

Strom BALLS Serve Industry

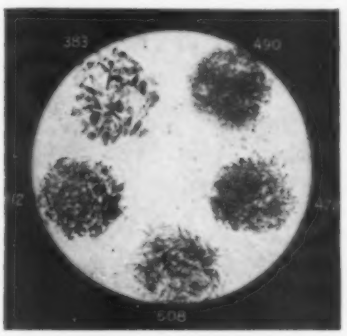
Largest Independent and Exclusive Metal Ball Manufacturer

BARK PROCESSING YIELDS VALUABLE NEW MATERIALS

A new and almost unlimited source of raw materials valuable in the manufacture of plastics, adhesives, insecticides, and in many other fields is being tapped by a commercial-scale bark processing plant put in operation by the Weyersauser Timber Co. at Longview, Wash.

The operation is a step toward complete utilization of forest resources. Bark, long considered almost worthless in logging, represents approximately 12% of a saw log. Under the Weyerhauser processes, bark now yields these main components: cork flakes, short fibers, tissue powder, a cork-fiber combination and a cork-fiber-powder combination.

A number of commercial uses for each of the bark fractions—now being marketed nationally under the trade name Silvacon—have been established in various fields. The Silvacons are designated as Nos. 508, 472, 412, 383 and 490.



The five fractions processed from bark by Weyerhauser

Among the applications of No. 508 is its use as an ingredient in impact grades of thermosetting compounds and in cold-molded plastics. It is said to give increased impact strength with little increase in the apparent bulk density. It consists almost entirely of bark's spindle-shaped bast fibers, 1/16 to ⅛ of an inch long. It is used as a reinforcing filler for hard, high density end products to improve strength properties and to minimize shrinkage.

Outside the plastics field, No. 508 has been used as an ingredient of magnesite flooring and as an absorbent filler for explosives. Non-plastic experimental uses include: tile flooring, buffing and abrasive compounds, casting resin reinforcing agent, hard rubber and asphalt compounds and as a fiber paint ingredient.

Silvacon No. 472 is a physical combination of three basic constituents of tree bark, cork, lignified fiber and powder, resulting in a material well-suited as a conditioning extender for numerous glues and resins.

Besides being widely used as an active chemical ingredient of phenolic glues, No. 472 serves as a reactive ingredient in thermosetting molding compounds and in match igniting compounds. Experimental uses include: ingredient in protein adhesives, foundry parting material, foundry core binder, cold-molded plastics compounds, tile flooring, rubber adhesives,

(*Please turn to page* 198)

Authoritative, useful Reference Material

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Published as a service to industry by the people who pioneered in welding fittings and manufacture the leading line. Return the coupon checked for the material you want.

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Twenty pages of specifications covering new items in the constantly expanding line of Tube-Turn* welding fittings.

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Interesting and informative, this 24-page booklet answers the question: "Why and Where Use Stainless Steel Piping?", and discusses applicable welding processes. Well illustrated.

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A handy booklet giving capacities in cubic inches of Tube-Turn welding Elbows, Returns, Caps, Lap Joint Stub Ends, Crosses, Reducers, and Reducing Outlet Tees in their full range of sizes.

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A folder of data about a major new development for better pipe welding—a perfectly engineered welding ring that assures exact root gap spacing and complete penetration.

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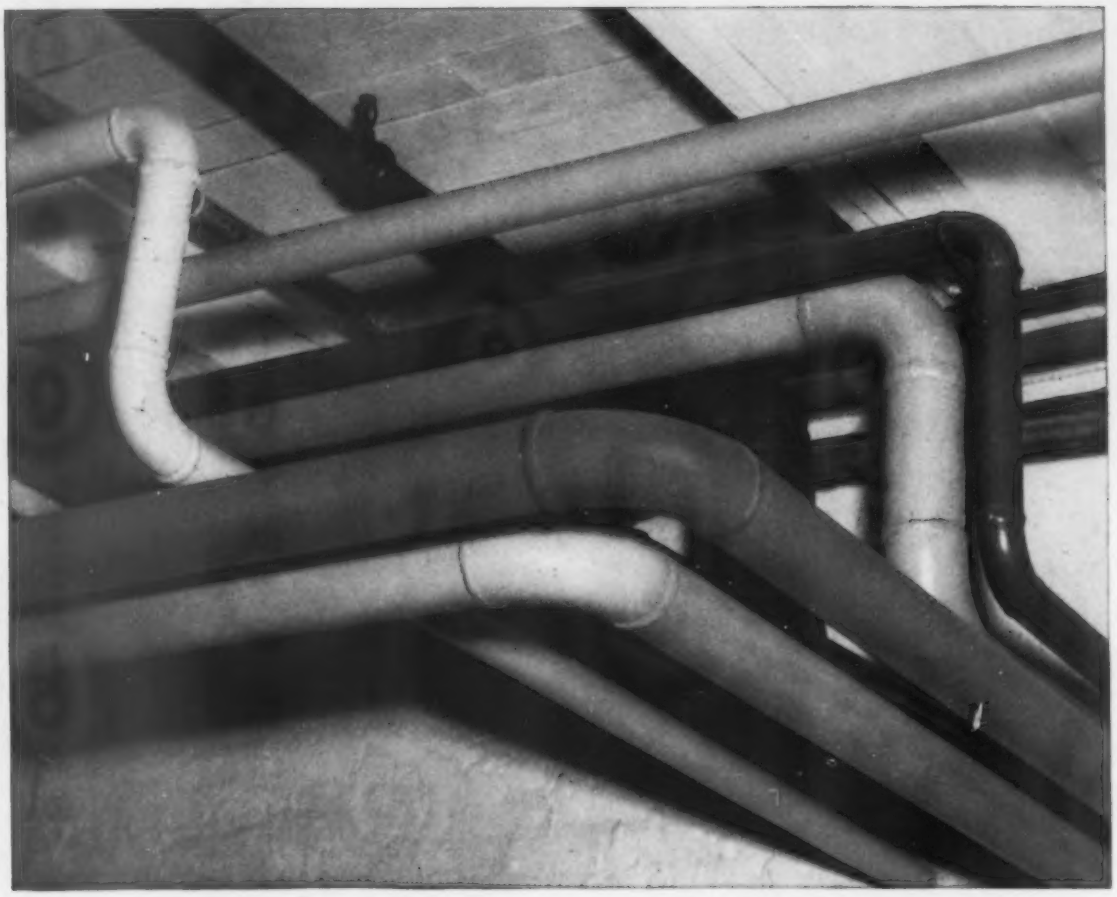

In ALL industrial piping systems, Tube-Turn seamless welding fittings and flanges—including over 4,000 sizes and styles—represent savings in space, weight, time and money.

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Tube-Turn welding fittings add superior, *forged-in* strength to any industrial piping system. Light in weight, and forming a continuous, leakproof connection with the pipe, Tube-Turn fittings are easy to install, simplify insulation. Absence of crevices and projections within joints reduces corrosion and erosion, also facilitates flow.

Backed by the nation's foremost welding fitting manufacturing experience, Tube-Turn welding fittings—*the fittings that become part of the pipe*—are quality-controlled for dependability, are readily available in the widest range of types, sizes, metals and alloys.

In addition to more than 4000 items in grade A and grade B carbon steels, Tube-Turn welding fittings and flanges are manufactured in wrought iron, copper, Monel metal, stainless steels, carbon moly steels, aluminum, brass, Inconel, nickel.

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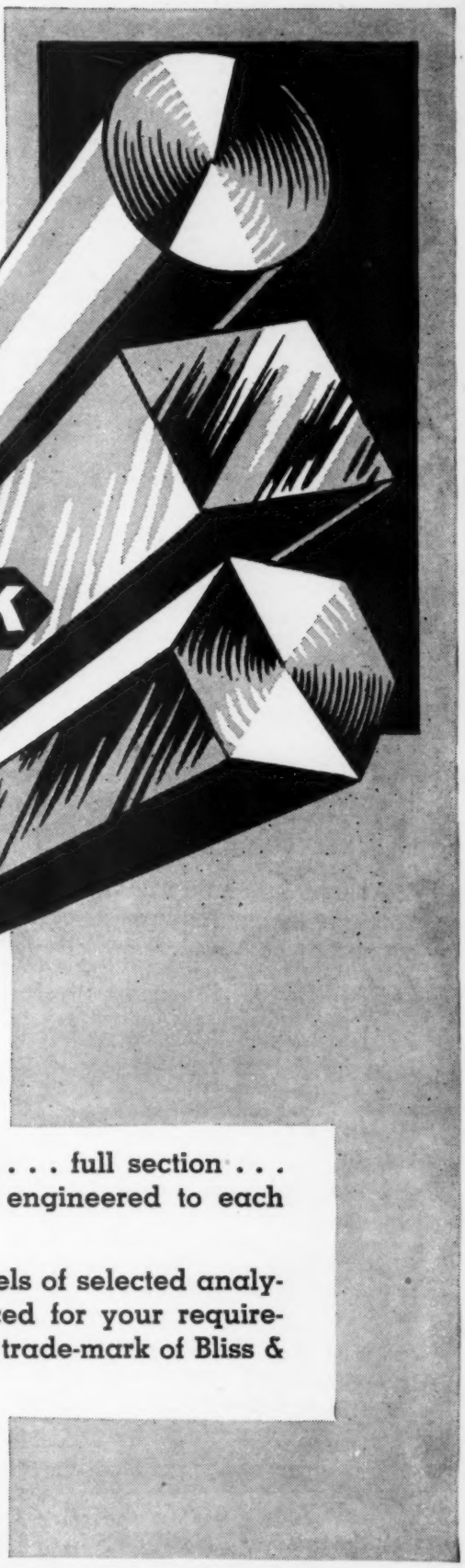
Welding Fittings and Flanges

Quality

COLD FINISHED STEEL *is* our TRADE MARK



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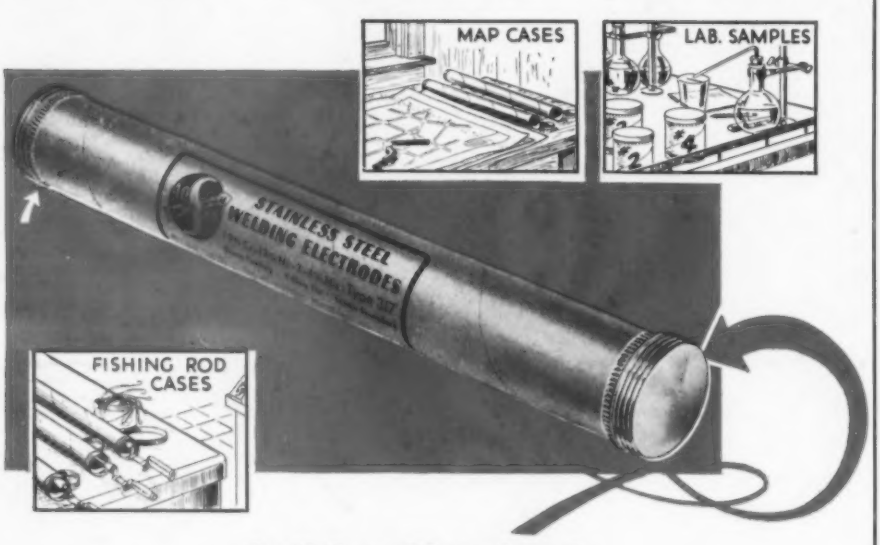
for the latest ideas in packaging... "Call Cleveland"



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SCREW CAP CONTAINERS

FOR A MULTITUDE OF USES these Screw Cap Containers are now available.

LENGTHS from the shortest possible to at least 60 inches.

TEN DIAMETERS available from ¾" up to 3".

FINISHED with plain body . . . labeled or waxed if desired.

Cleveland Screw Cap Containers have exceptional STRENGTH obtained by our spiral, heavy wall construction. Threaded and capped at both ends if preferred.

FAST PRODUCTION and delivery from our nearest plant.

ATTRACTIVE PRICES based on our immense production capacity.

MANY WORTH-WHILE USES of these Screw Cap Containers include:

SAFETY AND LOWER COSTS IN SHIPMENT.

CONVENIENCE in step-by-step production in scattered departments.

MAILING . . . Testing Laboratory samples, oil samples, catalogs and expensive printing.

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And many other uses.

Consult our Creative Design Department

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• All-Fibre Cans • Combination Metal and Paper Cans
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PRODUCTION PLANTS also at Plymouth, Wisc., Ogdensburg, N. Y., Chicago, Ill., Detroit, Mich., Jamesburg, N. J.
PLASTICS DIVISION at Plymouth, Wisc., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland, Ohio. • N. Y. SALES OFFICE — 1106 Broadway, Room 223 • IN CANADA — The Cleveland Container Canada Ltd., Prescott, Ontario.

(*Continued from page* 194)

welding rod coating material and explosives.

Composed of one-quarter cork and three-quarters lignified fibers, Silvacon No. 412 is used as a reactive ingredient in thermosetting molding compounds and as a binder in cold-molded plastics. The product is not a direct substitute for wood flour and resins, and processing methods must be adapted to bring out the full advantage.

In addition, it has been used successfully as an absorbent filler in explosives. Experimentally it is being used as an ingredient in foundry core binders, tile flooring and buffing, cleaning, rubber and asphalt compounds.

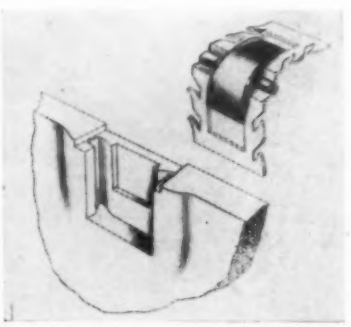
Silvacon 490, consisting of very finely powdered amorphous particles obtained primarily from the highly firable perenchymous tissue of bark, is useful in combination with insecticide ingredients that tend to become lumpy. It prevents sticking and agglomeration and adjusts the specific gravity of insecticide dusts. It is also used extensively as an ingredient in match scratcher igniting compounds. It is being tried experimentally as a paint ingredient.

Silvacon 383, known commercially as "Topper", is composed of cork particles ranging in size to ¼ inch, and is marketed as a soil conditioner. It is also used as a reactive ingredient in phenolic resin manufacture and as a smoke fuel in the curing of meat products.

* * *

SNAP ACTION HINGE FOR PLASTIC PACKAGE LIDS

New type of steel hinge which incorporates a spring clip to provide snap action to the lids of plastics packages, has been developed by the General Electric Plastics Division, Pittsfield, Mass.

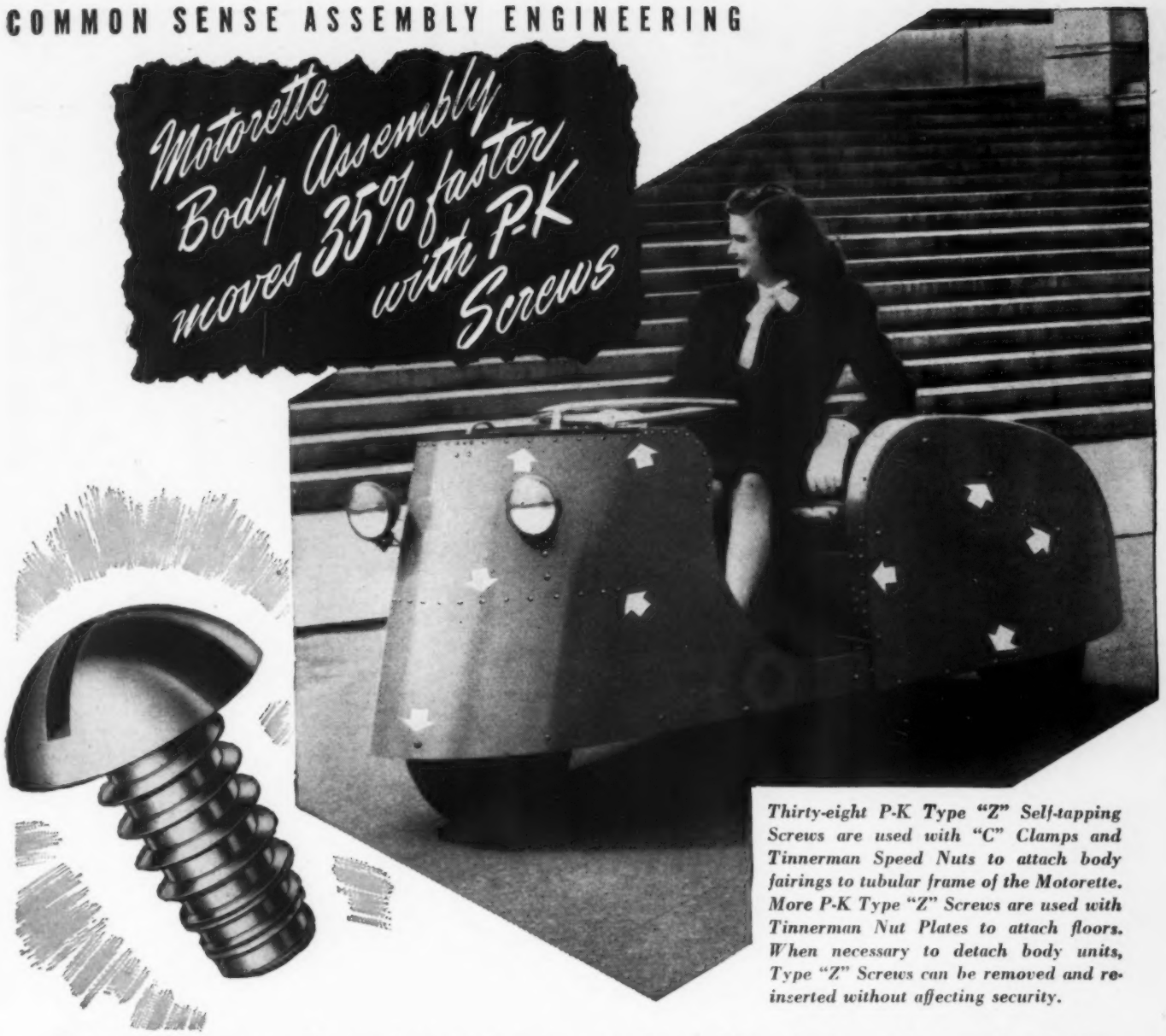


Designed with teeth that bite into slots molded in both the cover and base of the package, the new device simplifies assembling operations, eliminates the use of screws and rivets, and consequently reduces manufacturing costs, G. E. states.

It is said that the hinge can be used in both thermosetting and thermoplastic materials. Concentrating all the spring tension on the metal itself rather than the box cover and base, the new device relieves the strain on the plastic to provide a stronger assembly. If desired, the hinge can be used without a spring for boxes that do not require snap action.

COMMON SENSE ASSEMBLY ENGINEERING

Motorette Body Assembly moves 35% faster with P-K Screws



Thirty-eight P-K Type "Z" Self-tapping Screws are used with "C" Clamps and Tinnerman Speed Nuts to attach body fairings to tubular frame of the Motorette. More P-K Type "Z" Screws are used with Tinnerman Nut Plates to attach floors. When necessary to detach body units, Type "Z" Screws can be removed and re-inserted without affecting security.

● A 35% boost in assembly rate is nice going anytime—and even more worthwhile now, with wage levels mounting.

That's the saving credited by The Motorette Corp. to the use of P-K Self-tapping Screws for attaching body fairings on the smart little vehicle illustrated.

P-K Screws eliminated tapping, along with fussy alignment, tap breakage, wobbly starts, and cross threading. The 35% saving compares favorably with those of 30% to 50% made by thousands of manufacturers who use P-K Screws to avoid tapping, bolting, riveting, and inserts in plastics.

It's plain common sense to see if you can benefit by the money-saving, time-saving advantages of P-K fastenings in your assembly work . . . whether it's in blueprint stage or in production. Seven out of every ten assemblies submitted, have been benefited by the P-K "short-cut" fastening method. Call in a P-K Assembly Engineer—no obligation—or send your assembly details for recommendations. Write Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

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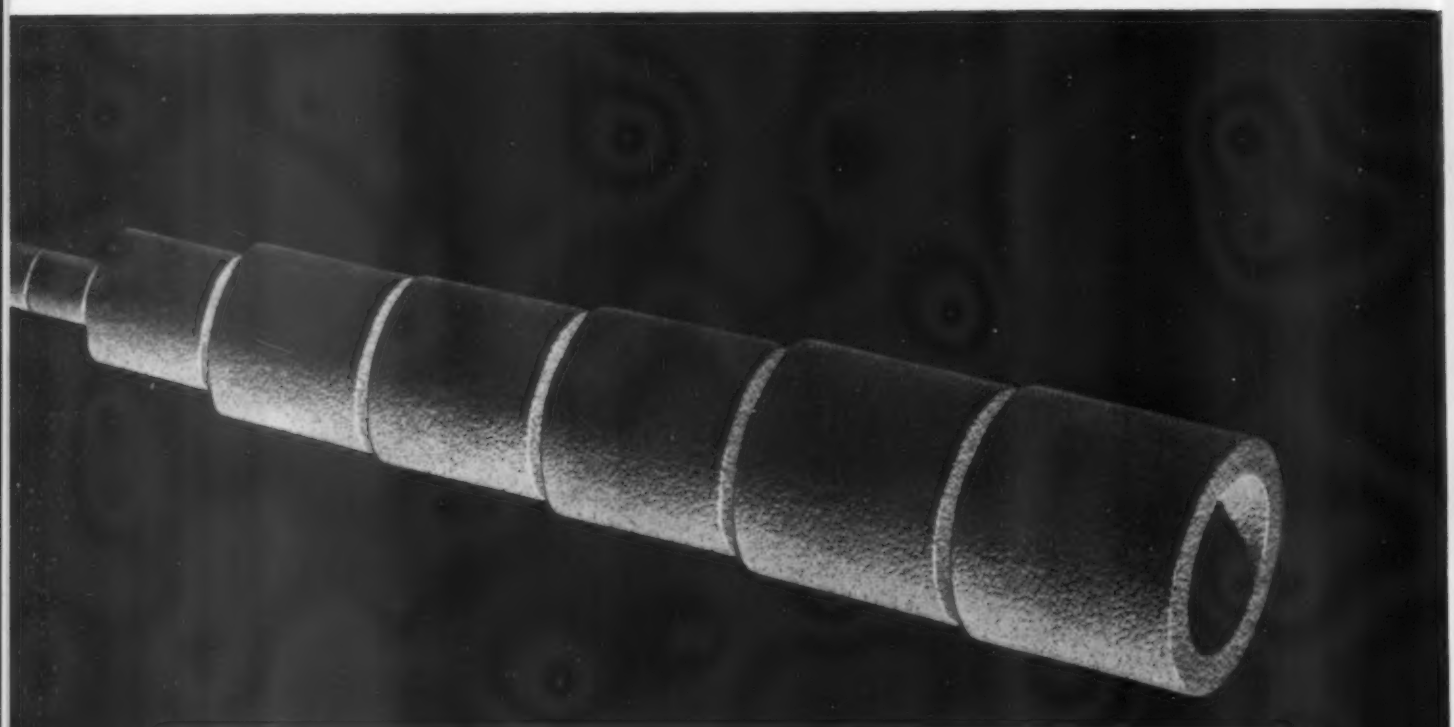

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You, like so many other manufacturers, may find smooth sailing to higher profits.

To manufacturers in more than fifty diversified fields, Peninsular wheels have brought great savings in grinding costs.

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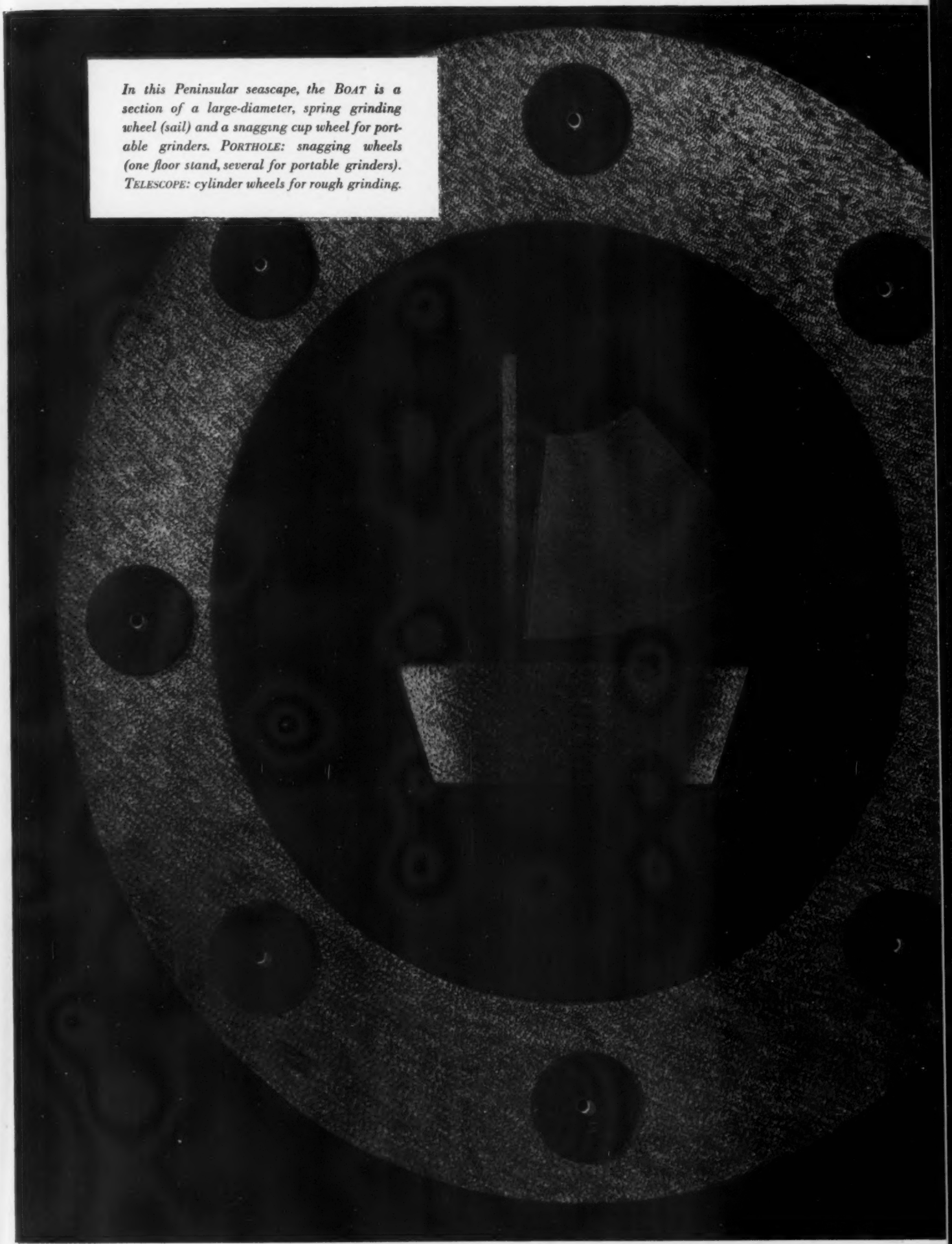
SINCE 1889

SPECIALISTS IN RESINOID BONDED WHEELS



In this Peninsular seascape, the BOAT *is a section of a large-diameter, spring grinding wheel (sail) and a snagging cup wheel for portable grinders.* PORTHOLE: *snagging wheels (one floor stand, several for portable grinders).* TELESCOPE: *cylinder wheels for rough grinding.*

a Program You'll Find Profitable to "CHAMPION" in Your Plant

You can take that two ways — both of them good business for you.

1. *Planned Lighting* is a cause worth *championing* from every standpoint — quality and quantity of output, worker morale, accident reduction, long-run economy.

2. CHAMPION Fluorescent and *Incandescent* Lamps for your planned lighting program give you efficient, dependable industrial lighting. CHAMPION manufacturing, testing and control methods assure lamp quality that is second to none. CHAMPION's policy of low overhead and clean-cut distribution through selected industrial distributors assure minimum lamp and lighting costs.

DEDICATED TO PLANNED LIGHTING

This modern plant and everyone in it is working night and day to implement your planned lighting program with the finest lamps that can be produced by modern equipment backed by forty-eight years of experience.

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

AUTOMATIC MANUFACTURE OF TRANSPARENT PLASTIC BOXES

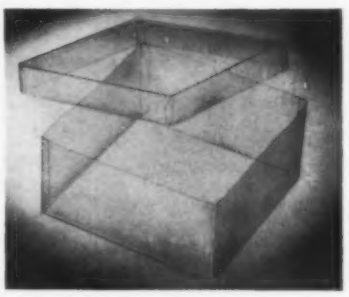
A fully automatic machine for the production of transparent plastic boxes directly from a roll of sheet stock has been developed by the American Tool Works Company, Cincinnati 2, O.

Known as the Trans-Bo-Matic, the machine is said to be easily and quickly adjustable for square or rectangular

Machine with one operator can turn out 1000 boxes an hour

boxes of varying sizes from 2½" x 2½" x ½" to 13" x 13" x ½". With one machine and the services of one operator it is said to be possible to turn out 1,000 boxes an hour from a roll of stock, which may be from 0.0.5" to 0.020" thick. It is only necessary to assemble the boxes to their lids or bottoms during inspection and they are ready to ship.

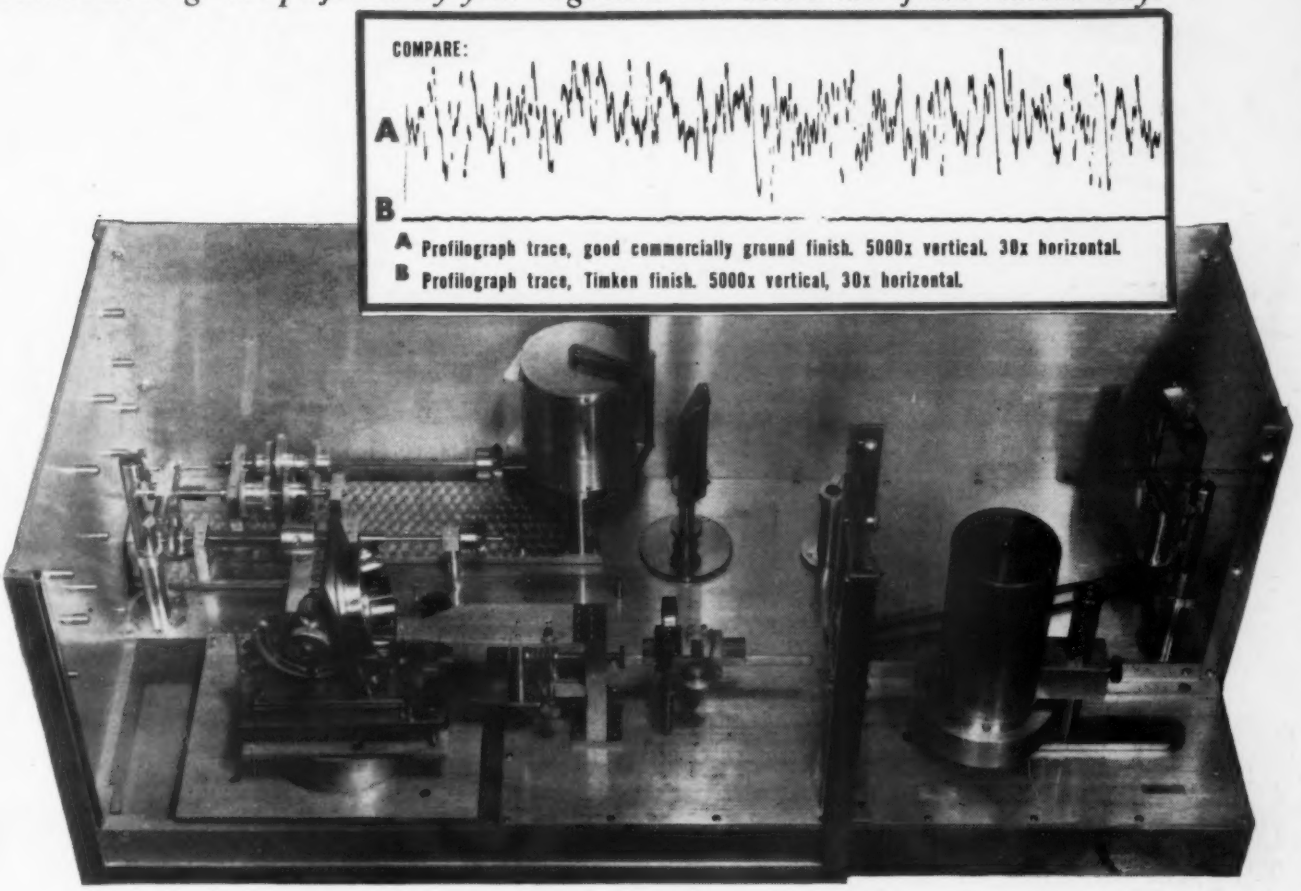
By using an inexpensive wooden form and approximately one hour set-up time, any box manufacturer can efficiently accommodate small orders as well as large. All operations of forming the box are completed, making the production of small orders practicable.



All operations are completed on the Trans-Bo-Matic

Specifications laid down when experimentation began several years and said to be incorporated in the machines now in use, called for a machine: wherein the die cost of various sizes of boxes is nil or reduced to a minimum; wherein the changeover time from one size box to the next is reduced to a minimum; wherein the output in boxes per hour is in the medium range—not a huge device with a stupendous output that would be purchased by only a few firms; substantial enough to stand up under the heavy pressures that are encountered in work on this kind of material; that offers maximum safety to the operator and the plant; that can be split into two parts for transportation in small elevators to upper stories of buildings.

Timken bearings are preferred by your engineers . . . here's one of the reasons why:


COMPARE:
A
B
A Profilograph trace, good commercially ground finish. 5000x vertical. 30x horizontal.
B Profilograph trace, Timken finish. 5000x vertical, 30x horizontal.

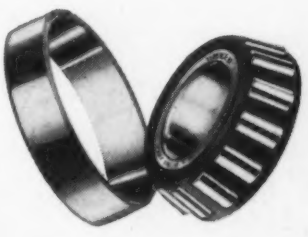
Answers the question— "How rough is smooth?"

ONE of the reasons Timken tapered roller bearings perform with such frictionless, wear-free ease is the amazingly smooth surface finish on the rolls and races—the finest known to modern bearing science.

Now, when you talk about finishes like this, you're talking about surface irregularities of only a few millionths of an inch—irregularities which are impossible to detect by any ordinary means. So, when Timken first began to develop this finish, one of the biggest obstacles was the absence of an accurate method of measuring the roughness of an apparently smooth surface.

The profilograph pictured above was the answer. Developed by Timken in 1928 and steadily improved since then, the profilograph determines surface irregularities to within one-millionth of an inch. Equipped with this measuring stick, Timken engineers were able to develop new finishing methods and machines, which have resulted in the microscopic surface accuracy of the Timken bearings you use today.

Every factor in the efficiency of a bearing is approached at Timken in this same scientific manner. For example, Timken makes its own steel to assure constant quality. And Timken is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels. No wonder you can always be sure of uniformly top quality and performance in the Timken bearings you use. The Timken Roller Bearing Company, Canton 6, Ohio.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

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PHONE CORTLAND 7-5860
C. C. Turner, District Manager, Acme Steel Co. (at right), pointing out advantages of the new Acme No. 3 Steel-strapper to Mr. W. Page Selby, Div. Purchasing Agent for Sonoco Products Co., manufacturers of paper cones, tubes, and spools.

"Help the P. A. Appraise Your Product..."

● "In our calls upon the Purchasing Agent, the interests of his firm and ours meet. Upon their dovetailing depends the amount of business transacted between us," says Mr. Turner.

"His appraisal of our ability to supply his needs depends upon our giving complete information about our materials, tools and service, and keeping him posted as to improvements and new developments."

Any sales manager will tell you that the primary place to deposit product information is with the P. A., if you want to collect steady "interest" in sales. That's why PURCHASING heads the list on so many well-balanced advertising schedules. It is the sure way to get "printed selling" to the Purchasing Agent. It is the P. A.'s own book, the one he never misses.

Ask your own Purchasing Agent about it, or write PURCHASING, 205 E. 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Los Angeles.

PURCHASING

ABC ABP

A CONOVER-MAST PUBLICATION

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

UNITED STATES RUBBER COMPANY
SERVING THROUGH SCIENCE

With a Lift of Her Finger... She Raises Pressure by the Ton!

U. S. Royalite Grinding Wheel Sample being tested with this specially-designed machine in a U. S. Rubber Company laboratory.

Here, on a specially-designed machine, "U. S." engineers have taken a grinding wheel sample and just tested it to destruction!

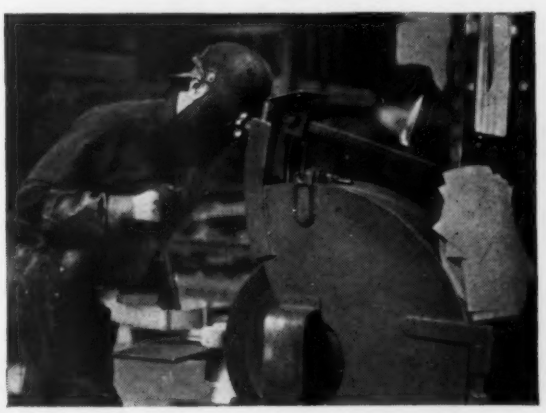
But before this grinding wheel reached the breaking point, it had proved its ability not only to meet, but to *surpass*, the strict specifications demanded by the customer's job.

Thorough testing in "U. S." research laboratories is one of the reasons why U. S. Royalite Grinding Wheels are so much in demand, testing that covers not only abrasives and bonds of every kind, but also the related fields covered by all the products of United States Rubber Company.

Then there's the test of time. Experience built up in the course of 84 years enables "U. S." to solve current wheel problems of every type—and to anticipate future problems brought on by higher production quotas and new manufacturing techniques.

As a result, whether you're snagging castings, grinding ball races or working with billets, bits, slabs or sauce pans, you'll find a U. S. Royalite Wheel carefully *engineered to your job*. In addition, "U. S." field engineers, by thorough testing right in your own plant, can give you accurate grinding wheel costs *in advance*.

For complete information, write to Mechanical Goods Division, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.



When this midwestern iron foundry adopted high speed snagging 17 years ago, it picked U. S. Royalite Wheels. It has been using them ever since on the basis of their superior performance.

U. S. ROYALITE GRINDING WHEELS

ENGINEERED TO YOUR JOB

Correction Please!

WELDRAWN* (Welded and Drawn) Beryllium Copper Tubing

★ *is not expensive...*
★ *offers advantages not found in any other alloy!*

All too frequently Beryllium Copper tubing has been dismissed as "too costly."

We at Superior Tube Company want to correct that erroneous impression—Superior WELDRAWN (welded and drawn) Beryllium Copper is not priced out of the market.

In fact, Superior Beryllium Copper tubing often *lowers* the *installed* cost of a part, reduces assembly time, or adds greater service life to a component—all factors to be considered in these competitive days.

Don't miss the opportunities which Superior Beryllium Copper tubing may hold for you—uninvolved heat treatment for hardening, high tensile strength, fatigue resistance, low drift, good formability, corrosion resistance, and electrical conductivity if you need it—

GET FULL PARTICULARS ON BERYLLIUM COPPER SMALL TUBING BY SUPERIOR AND COMPARE!

Write today for Data Memo #7

*Reg. U. S. Trademark, Superior Tube Company

THE BIGGER NAME IN SMALL TUBING Superior (.010" to 5/8" O.D. MAX.)

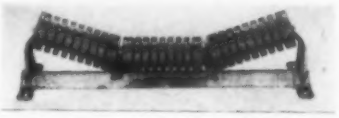
For Superior tubing on the West Coast, call PACIFIC TUBE COMPANY, 5710 Smithway Street, Los Angeles 22, California ANgeles 2-2151

SEE OUR CATALOG IN SWEET'S FILE

SUPERIOR TUBE COMPANY
2034 Germantown Ave.
Norristown, Pennsylvania

NON-PNEUMATIC CUSHION TYPE IDLER FOR CONVEYOR BELTS

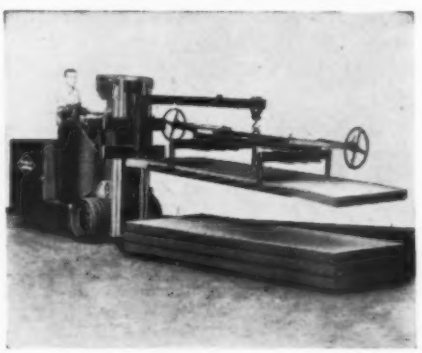
Belting engineers of Goodyear Tire & Rubber Co., Akron, O., have developed a new type of impact-cushioning idler for belt conveyors, supplementing the company's previous application of pneumatic tires beneath belts to absorb the shock of falling material.



Non-pneumatic, the idler consists of rubber rings mounted on the idler core instead of the conventional rubber-covered steel idler. By comparison, maximum deflection is about six times greater, according to W. P. Hallstein, assistant manager of the belting department. High resiliency of the rubber rings solves the impact problem by decelerating the lump, he said. As a result, the life of even top quality belts is increased materially, double in some instances, he stated.

The rubber ring-idler is designed for less severe impact conditions than in coal and ore mining, and which do not require the use of tires.

FORK TRUCK ACCESSORY HANDLES STEEL PLATE



The problem of handling long sheets of steel in or out of freight cars is successfully handled by the use of accessory equipment that takes full advantage of the principle of counter-balancing effect of the truck, according to the Elwell-Parker Electric Co., Cleveland, O.

An electric truck, normally handling 6000 lbs. at 24" in front of the uprights, will handle a 3000 lb. load of 8' x 4' or 2000 lbs. of 10' x 4' lengthwise, including the weight of the accessory, or 6000 lbs. of 8' x 4' or 10' x 4' crosswise the truck. The truck has forward and backward tilt. The latter to stabilize the load when traveling, since the near end of the load rests against the uprights. The truck is furnished with telescoping uprights so that it may enter a boxcar and yet stack steel 6' to 10' high. One inch dunnage strips between unit loads facilitate the insertion of lifting lip of the suspended clamp-grab. The grab has 24" adjustment for widths and is 84" long. The truck travels at 400 fpm and elevates at 12 to 22 fpm.

(*Please turn to page* 210)

Read Why INDUSTRY'S Fastening-Wise LEADERS CHOOSE PHILLIPS SCREWS

Get These Inside Stories . . . *right off the big assembly lines* . . . word-of-mouth interviews with key men in 24 of America's best-operated plants, who told why they use Phillips Recessed Head Screws to independent investigators from the James O. Peck Company, industrial research authorities.

These Assembly Savings Reports take you right into top-rated plants manufacturing metal, wood, and plastic products . . . precision instruments, household appliances, machine tools, radio phonographs, cars, busses, furniture. Read how dollars saved daily through faster driving, and by avoiding driver slippage, mount to thousands per year. Read how burred heads are eliminated, products made more attractive.

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Wood Screws · Machine Screws · Self-tapping Screws · Stove Bolts

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Reading Screw Co.
Russell Burdsall & Ward Bolt & Nut Co.
Scovill Manufacturing Co.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wolverine Bolt Company

Phillips Screw Mfrs., c/o Horton-Noyes
1800 Industrial Trust Bldg.,
Providence, R. I.

Send me 24 reports on Assembly Savings with Phillips Screws.

Name .....

Company .....

Address .....

NEW *Life-Line* MOTORS NOW AVAILABLE

WESTINGHOUSE NOW OFFERS *IMMEDIATE DELIVERY* ON *STANDARD* LIFE-LINE MOTORS . . . IN RATINGS FOR 60% OF INDUSTRY'S REQUIREMENTS

To meet industry's urgent need for more—and better—motors, Westinghouse embarked two years ago on the biggest engineering and manufacturing program ever undertaken in this field.

Industrial buyers were surveyed to find the improvements most desired in existing standard motors. These improvements were incorporated, for the first time, in a single motor—the Life-Line—*a motor designed, from scratch, to user specifications.*

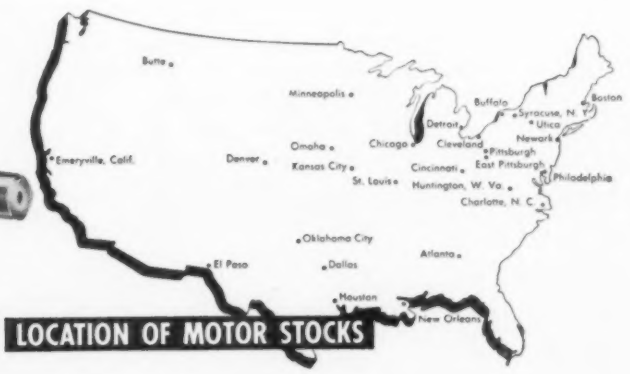
To build the Life-Line motor, a complete new plant was purchased, tooled and equipped from the ground up, with machines and new techniques never used before to manufacture motors.

Today, we announce the attainment of our first objective. The new Life-Line motor is now available from stock, in standard types from 1 to 15 hp.

This objective was selected as of first importance, since 60% of standard, integral horsepower motors required by industrial users fall in this classification. Motor types included in stock are described on the opposite page. On "near-standard" motors, also described, short deliveries are available in these sizes.

Improved deliveries on special types and larger ratings will be the subject of future announcements, as quickly as increased output makes them possible. Watch for them . . . phone your orders from this stock list to your nearest Westinghouse representative. Westinghouse Electric Corp., Box 868, Pittsburgh, Pa.

J-21447-A



Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

FROM 1 to 15 HP FROM STOCK

WHAT IS MEANT BY "STANDARD" MOTORS

"Standard" motors include drip-proof, splash-proof, totally-enclosed, fan-cooled and some totally-enclosed, non-ventilated complete motors, ball-bearing type, having standard electrical characteristics (220/440 volt, 2 or 3-phase, 50 or 60-cycle, standard speed torque and time-temperature characteristics).

Available from stock in ratings indicated below. Very short delivery on any standard non-stock rating in these frame sizes.

TYPES INCLUDED AS "NEAR-STANDARD" MOTORS

"Near-standard" motors are those with minor modifications, which include such items as double shaft extensions, NEMA standard B and C flanges, special No. 1 insulation, round frame, conduit box opposite standard, squeeze connectors instead of conduit box, TENV motors, partial motors, 50-cycle, 40° C. rise open motors, etc.

Short delivery in frame sizes listed below.

Life-Line A-C, Single-Phase, 60-Cycle, 110-220-Volt, Heavy-Duty Type CAP Capacitor-Start, Induction-Run Motors

HP	RPM	FRAME	VOLTS	IN STOCK
1	1750	203	220	√
1½	1750	204	220	√
2	1750	224	220	√
3	1750	225	220	√

Life-Line A-C, 3-Phase, 60-Cycle, Squirrel-Cage Motors

HP	RPM	Frame	Volts	ENCLOSURE TYPES IN STOCK		
				Drip-Proof	Splash-Proof	Totally Enclosed
½	860	204	220/440	√		√
¾	1150	203	220/440	√		√
	1150	203	550	√		√
	850	224	220/440	√		√
1	1750	203	220/440	√		√
	1150	204	220/440	√		√
	850	225	220/440	√		
	850	225	550	√		
1½	3450	203	220/440	√	√	
	1750	204	220/440	√		√
	1150	224	220/440	√		√
	860	254	220/440	√		
2	3450	204	220/440	√		
	3450	204	550	√		
	1750	224	220/440	√	√	√
	1750	225	220/440			√
	1150	225	220/440	√	√	√
	860	254	220/440	√		√
	860	254	550	√		
	710	284	550	√		
3	3450	224	220/440	√		
	3450	224	550	√		
	1750	225	220/440	√	√	√
	1750	225	550			√
	1135	254	220/440	√	√	√
	875	284	220/440	√		
5	3450	225	220/440	√	√	
	1735	254	220/440	√	√	√
	1735	254	550	√		
	1200	284	220/440	√	√	√
	875	324	220/440	√		
7½	3470	254	220/440	√		
	1740	284	220/440	√	√	√
	1740	284	550	√		√
	1160	324	220/440	√		
	865	326	220/440	√		
10	3500	284	220/440	√	√	
	1740	324	220/440	√		√
	1740	324	550			√
	1155	326	220/440	√	√	
	870	364	220/440	√		
15	3500	324	220/440	√		
	1750	326	220/440	√	√	
	1160	364	220/440	√		
	1160	364	550	√		
	875	404	220/440		√	

Subject to prior sale.

Life-Line motors

MORE PRODUCTIVE POWER FOR INDUSTRY

Top view shows a typical sludged engine BEFORE desludging with Magnus 755. Bottom view shows same engine after simple treatment described at the right.

DESLUDGE YOUR TRUCK ENGINES WITHOUT TEAR-DOWN!

With Magnus 755 you don't have to dismantle the engine to remove all harmful sludge. Just replace oil with Magnus 755 and idle engine outdoors for an hour. Drain, flush and put in fresh lube oil. That's all.

Write Magnus for full details on this and many other fleet cleaning shortcuts.

And for *Preventing* Sludge...

keep your lube oil supplied with the proper concentration of Magnus Metaffin which inhibits the formation of harmful sludge.

Magnus Chemical Co., 93 South Ave., Garwood, N. J. In Canada — Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.

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HIGH QUALITY *specialty steel wires*

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ELECTRODEPOSITION OF TUNGSTEN ALLOYS

A method of producing satisfactory electrodeposits of tungsten alloys on metal surfaces is announced by the National Bureau of Standards, Washington, D. C. Smooth, thick deposits of tungsten alloyed with cobalt, nickel, or iron have been obtained from hot ammoniacal solutions containing organic acids. These alloys are quite hard and, what is more, retain their hardness at elevated temperatures, just as do the similarly constituted cast metallurgical alloys.

The commercial importance of tungsten alloys is directly related to their use in applications—such as bearings, pistons, cylinder, dies, molds and machine tools—where hardness, or high strength at elevated temperatures are essential.

The nickel-tungsten and cobalt-tungsten deposits have good adhesion to steel and can be plated up to a thickness of 0.02 inch without becoming appreciably nodular. As formed, they are brittle and show a laminar structure under the microscope, but heating to suitable temperatures results in the disappearance of the laminations as the alloys become ductile.

The most interesting feature of the alloys obtained by this program is their hardness, which in the untreated nickel- and cobalt-tungsten alloys may be between 400 and 700 on the Vickers scale. The iron alloy is still harder, ranging from 700 to 90 Vickers; it is thus comparable in hardness to electrodeposited chromium.

Unlike most other electrodeposits, which soften with heat treatment, these alloys may increase 100 points or more in hardness upon heating to 600°C. The cobalt-tungsten alloy is of further interest in that it maintains a fair degree of hardness even at quite elevated temperatures. For example, at 700°C the hardness of a carbon steel drops to about 50 Vickers, whereas the cobalt-tungsten alloy at this temperature has a hardness of over 290 Vickers.

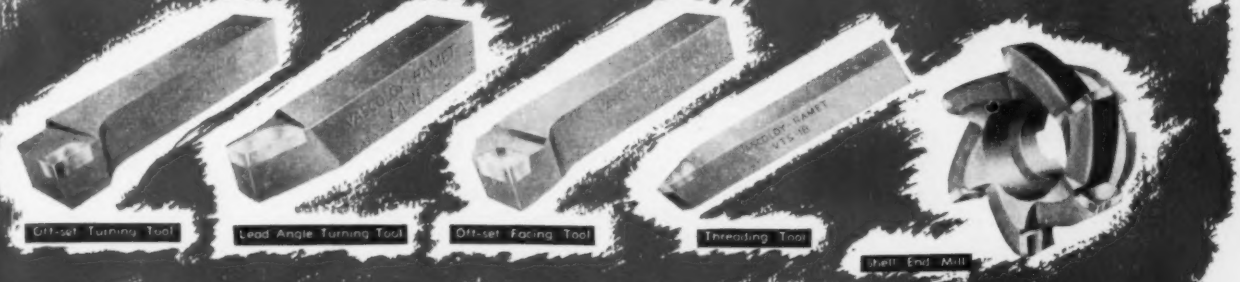
The resistance of the nickel- and the cobalt-tungsten alloy to chemical attack is not much greater than that of either nickel or cobalt in the pure state, with the exception that they are much more resistant to nitric acid. In the salt-spray test, coatings of cobalt-tungsten alloy show less porosity and afford better protection to steel than do ordinary nickel coatings. However, the nickel-tungsten alloys are inferior in protective value to nickel coatings.

While tungsten alloys deposited from the solutions developed at the Bureau have not yet been utilized commercially, it is expected that they will find application on surfaces that require hardness and durability at elevated temperatures. Because of the excellent throwing power of the solutions, these coatings are more readily applied to irregular-shaped surfaces than is chromium plate. The electrodeposition section of the National Bureau of Standards will cooperate with those who are interested in plating small metal parts that can be subjected to a service test.

(*Please turn to page* 212)

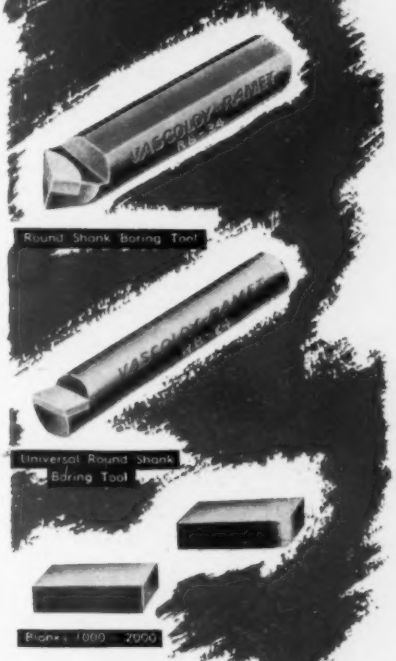
DATA SHEET NO. 1

FOR BUYERS OF CARBIDE STANDARD GRADES



STANDARD TOOL GRADES

	Grade	Hardness Rockwell "A" Scale
FOR STEEL: A tough, strong grade for very heavy roughing and for interrupted cuts.	EE	90
FOR STEEL: A medium grade for general machining.	EM	91
FOR STEEL: A hard finishing grade for light cuts at higher speeds.	E	92
FOR CAST IRON, NON-FERROUS METALS, AND NON-METALLIC MATERIALS: A general purpose grade for roughing and semi-finishing cuts.	2A68	91
FOR CAST IRON, NON-FERROUS METALS, AND NON-METALLIC MATERIALS: A hard grade for light roughing and finishing cuts.	2A5	92



Send today for your free copy of the V-R 400 Carbide Tool and Blank Catalog. Contains all the information you want for sound, practical carbide tool buying.

Because V-R carbides achieve a perfect balance of key purchasing factors, quality, cost and service, more and more purchasing executives are placing V-R at the top of their tool supply lists. Call or write your nearest Vascoloy-Ramet Field Engineer for any additional V-R tool information you may require.

VASCOLOY-RAMET CORPORATION NORTH CHICAGO ILLINOIS, U. S. A.

District Sales and Service in Principal Cities

An affiliate of The Fansteel Metallurgical Corporation and The Vanadium Alloys Steel Company

"Brake Shoe Research serves you today and anticipates tomorrow"
Wm. B. Given, Jr., President

CASTINGS PILOTED HERE
give you
THE BEST FOR YOUR PURPOSE

CASTINGS BY BRAKE SHOE
• Meehanite® • ABK Metal •
Gray Iron, plain or alloyed

• In this completely equipped experimental foundry you can get impartial experience-based recommendations as to which of these three types of metals will serve you best for your cast parts. It is one building of a group at Mahwah, N. J., the national research headquarters of American Brake Shoe Company.

Whichever metal proves best for you, Brake Shoe foundry techniques can benefit you in both pilot and production foundries at Mahwah, N. J., and in the company's production foundries at Melrose Park, Ill., and Baltimore, Md.

At these plants, castings can be made in widely-used types (light, medium or heavy weight, green or dry sand or all core assemblies) including intricate and special types. Write us about your needs; let us tell you what we at Brake Shoe can do to meet them.

6205

AMERICAN Brake Shoe COMPANY
BRAKE SHOE AND CASTINGS DIVISION
230 PARK AVENUE, NEW YORK 17, N. Y.

METHYL BROMIDE AS AN EXTINGUISHING AGENT

Recently several small fire extinguishers have been put on the market in this country in which the extinguishing agent was methyl bromide. None of these extinguishers has been listed by Underwriters Laboratories.

The effective quality of this material as an extinguishing agent was recognized during the war; systems were installed in aircraft which would spray the liquid as a mist or vapor in the engine space to put out fires. It is the general opinion of those best informed that due to its high toxicity it should not be used in fire extinguishers available to the general public. Food brought in contact with methyl bromide should be discarded.

Below is given the information on methyl bromide as taken from data issued by Underwriters Laboratories:

"Methyl bromide (CH_3BR) (when pure) is a colorless, transparent volatile liquid, SP. GR. 1.73, boiling point 4.6 C (40.3) F), vapor density, 3.29 (air=1).

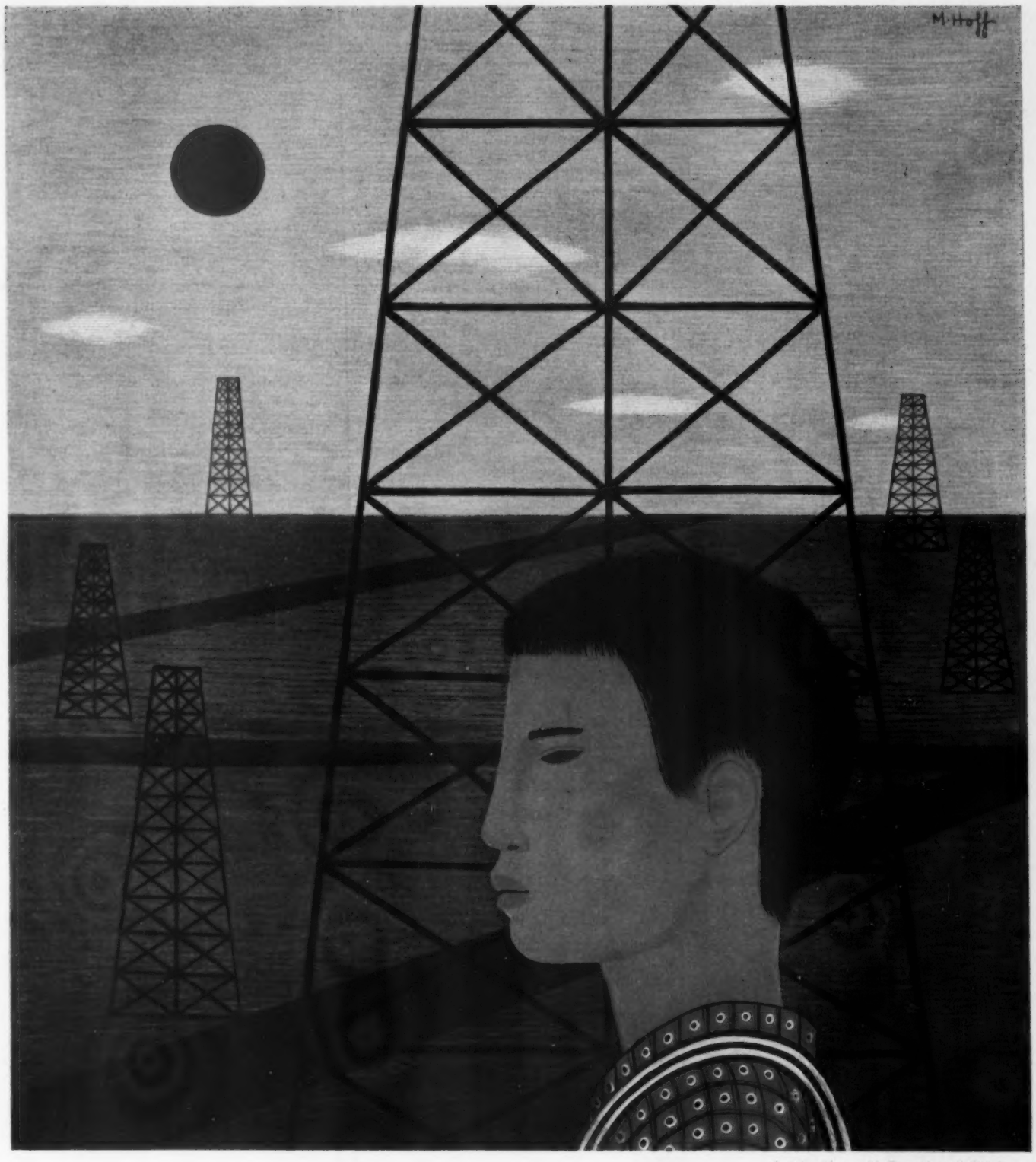
"**Toxic Hazard.** Methyl bromide in concentrations of the order of 0.7 to 1.0 per cent by volume in air for durations of exposure of the order of ½ hr. has been shown to be lethal to guinea pigs. Its odor is not distinctly unpleasant and it cannot be said to give definite warning of its presence in dangerous concentrations. Underwriters' Laboratories test data confirm opinion that methyl bromide, like many other toxic products, may not manifest its poisonous effects immediately.

"Methyl bromide readily decomposes into toxic products in the presence of flame or heated surfaces at high temperatures. These products include hydrobromic acid (HBr) and small amounts of bromide (BR_2).

"**Fire hazard** is very small and the material is classified as 'weakly flammable'. Weak flame propagation within the narrow range of 1 per cent (13.5 to 14.5 per cent by volume) in the presence of an intense source of ignition is recorded in technical literature.

"**Uses.** Methyl bromide is effective as a fire extinguishing agent in certain concentrations and has also been used as a refrigerant. In both instances, however, its use has been limited on account of the high toxic hazard. Methyl bromide finds its principal use as a fumigant and is listed by the Laboratories for this purpose, both alone and mixed with CO_2 in Section II of the List of Gas, Oil and Miscellaneous Appliances. For use alone it is supplied in steel cylinders under pressure of 11 lbs. per sq. in. at 70F.

"Listed mixtures of methyl bromide and carbon dioxide for use as fumigants are supplied in steel cylinders under a pressure of 820 lb. per sq. in. at 70F. These mixtures are classed as non-flammable and are characterized by toxicity of a comparatively low order when used in proportions of 15 to 28 lb. per 1000 cu. ft. and in accordance with the procedure recommended by manufacturers."
—*National Board of Fire Underwriters*



Artist – Margo Hoff, native of Oklahoma

OKLAHOMA—*annual purchases: $1 billion—mostly packaged.*

CONTAINER CORPORATION OF AMERICA

Your
RIVETING
costs can be . . .
Reduced!

by MILFORD'S 3 POINT PROGRAM

1. Free Engineering Consultation.
2. Fifteen Basic Riveting Machines offering unlimited versatility.
3. A complete line of semi-tubular or split rivets and cold-headed fastening parts.

Don't Guess — Try Milford And be Sure!

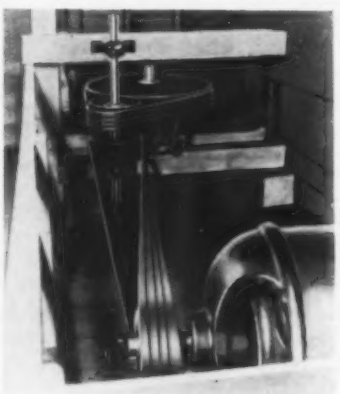
MILFORD RIV-IT & MACHINE COMPANY
1000 MERWIN ROAD, MILFORD, CONN.
1000 WEST RIVER ST., ELYRIA, OHIO

INSTALLATION SAVES $300 MONTHLY IN ELECTRIC BILLS

An unusual Multi-V belt installation to create a quarter-turn, double speed-up drive in which a water wheel transmits power to an electric generator is reported by The B. F. Goodich Company, which manufactured the belts and installed the drive.

Operation of the drive is saving the eastern plant where it is operated, an average of $300 monthly in electric bills.

The water wheel develops 25 horsepower at 257 rpm. The first speed-up drive uses a four groove C section 36 inch sheave on the water wheel shaft driving to a four groove, C section 13 inch sheave on the jack shaft, with four C-144 Multi-V belts set on 32.4 center distances.



Cost of installation including second hand generator is placed at $550

In the second speed-up drive a four groove, 13 inch C section sheave is used on the shaft and a four groove, 10.2 inch C section on the generator, with four C-240 Multi-V belts set on 101-6 center distance.

The drive provides a speed of 900 rpm on the generator, sufficient to operate it.

"CUTTING FLUIDS FOR BETTER MACHINING"

Completely revised edition of the booklet, "Cutting Fluids for Better Machining," a seventy-two page catalogue of metal-working information, has been published by the D. A. Stuart Oil Company.

Revised to keep pace with the latest metal cutting developments, the booklet contains a wealth of data on the application of Stuart Oils for cutting, grinding, drawing, quenching and tempering, and all other phases of metalworking and industrial lubrication. In addition, useful sections on Metal Cutting Mechanisms, The Selection of Cutting Fluids, Rules for Prolonging Tool Life, handy tables of Standard Steel Specifications, Independent Research Committee Data and Marking system Chart for grinding wheels are included.

This convenient pocket-size reference handbook is available to men of the metalworking industries without charge by writing D. A. Stuart Oil Company, 2727-31 South Troy Street, Chicago 23, Illinois.

Another **DOLGE** *First!*
KADOL
The New *LIQUID* Floor Cleaning Compound
DEVELOPED IN DOLGE LABORATORIES

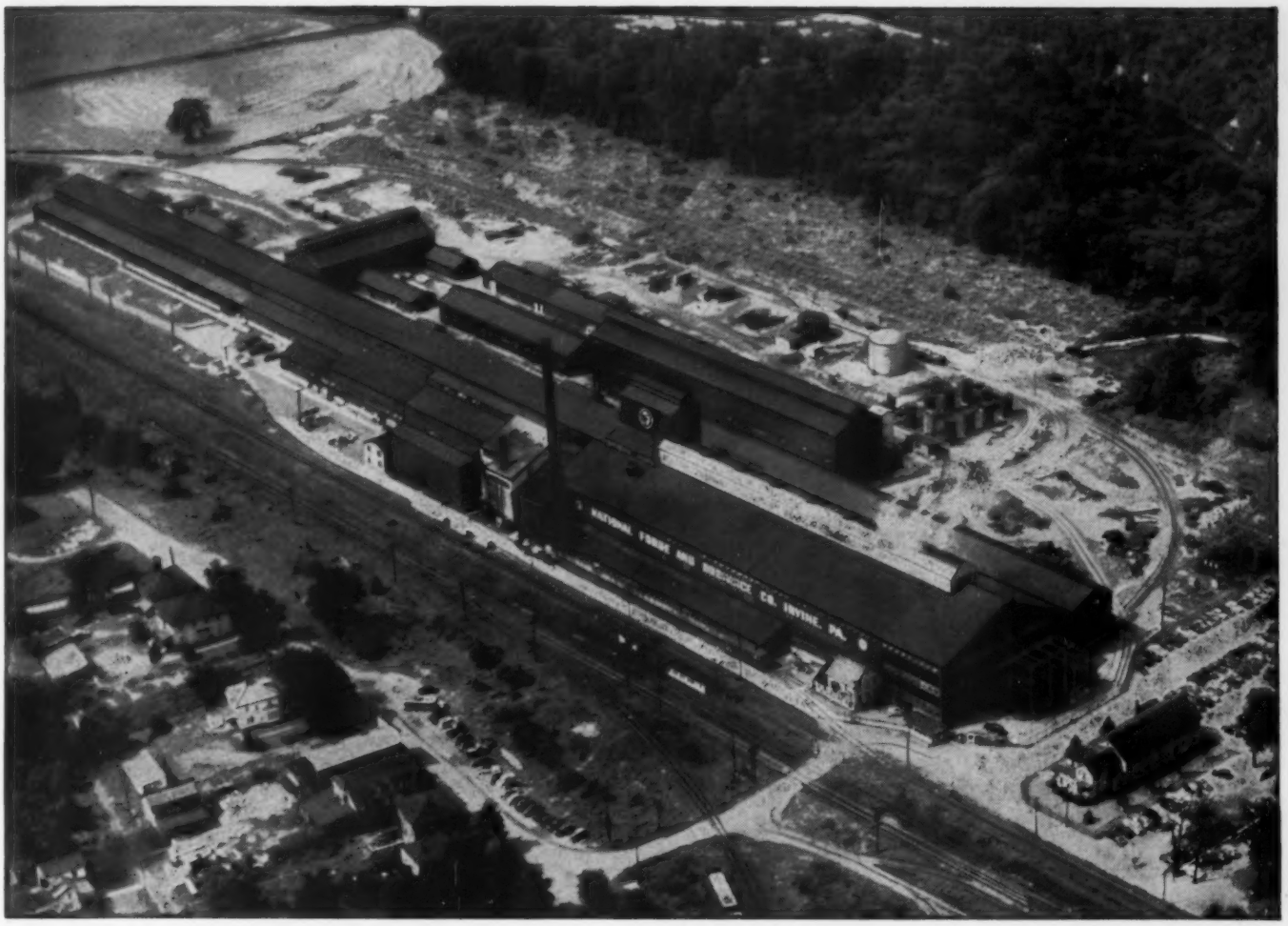
KADOL is *today's method* of cleaning various types of flooring because its concentrated, brilliant *liquid* form permits *pouring* to make an economical dilution of *only two ounces to the gallon of water.* Easy to handle — and it goes a long, *clean* way in keeping your floors immaculate.

KADOL is *neutral* — can be used safely on linoleum, cork also wood mastic, tile and many other surfaces, and is recommended as a *general cleaner.* No rinsing is ordinarily required; when a **KADOL**-cleaned surface is dry-mopped, an attractive polish results.

KADOL has no druggy, clinging odor associated with usual cleaning compounds. Its fragrance is pleasant and unobtrusive.

Write for the new KADOL booklet which explains its many advantages, and see your DOLGE Service Man.

KADOL
The C. B. DOLGE CO.
WESTPORT, CONNECTICUT



THIS IS THE PLANT WHERE THE BETTER STEEL FORGINGS WILL BE MADE IN 1948

Unless you have had occasion lately to fly over Irvine in Warren County, Pennsylvania, you have not seen this view of the National Forge plant before.

Greatly expanded in buildings, equipment and man power during the war years, National Forge is entering its 35th year. With exceptionally well balanced facilities for producing a vast range of steel forgings, whether weighed in pounds or tons, National Forge will continue to give the best in steel forging service.

Within this plant basic electric steel is made under rigid metallurgical and chemical laboratory control. National Forge makes its steel by the electric process—a melt for each forging—to assure steel of higher quality and cleanliness.

Forging equipment, manned by forgesmiths of long experience, shape this steel into forgings designed to possess the most desirable grain structure and physical properties. To acquire these desired characteristics modern heat treating facilities are provided. Both vertical and horizontal furnaces, equipped with the latest thermostatic control, are used for quenching, tempering, annealing, normalizing and spheroidizing. Vertical furnaces handle lengths up to 55 feet and horizontal furnaces take forgings up to 34 feet long.

The main machine shop extends for an unbroken length of a quarter of a mile and contains machine tools of the most modern design as well as essential handling equipment for efficient machine shop operation. In addition to the machining of forgings, this machine shop also houses a large department for contract machine work and assembly.

You should know in detail the many better ways in which this plant can serve you. A word by mail will bring you the interesting "inside the plant" story. Just address the **National Forge & Ordnance Company, Irvine, Warren County, Pennsylvania.**

Switch to—

AUTO-LITE

Precision Manufacturing

Die Castings

All forms of zinc and aluminum die castings, machined, finished and plated.

Plastics

Plastics by compression, automatic, injection and transfer methods. Plastic-metal assemblies.

THERE are 37 years of experience back of the more than 400 products precision manufactured by Auto-Lite for many industries. The facilities of 28 great manufacturing plants, combined with the "know-how" of Auto-Lite engineers and designers, have won a world-wide reputation for unvarying quality and dependability. A new booklet listing many of the major products of The Electric Auto-Lite Company is available. To obtain your copy write to

THE ELECTRIC AUTO-LITE COMPANY

Sarnia, Ontario Toledo 1, Ohio

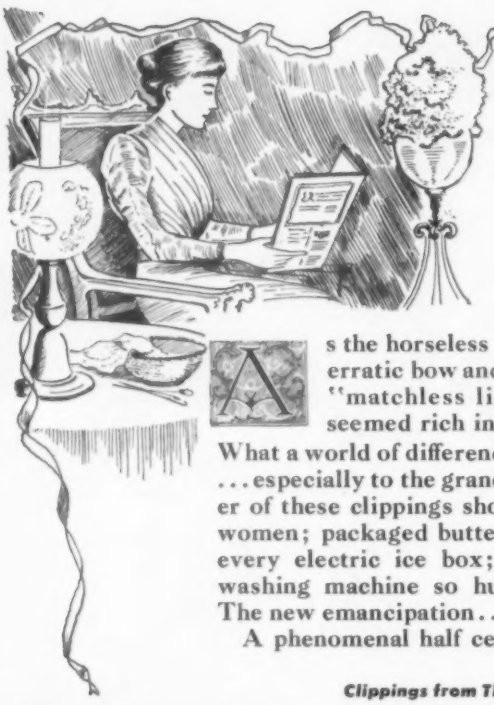
AUTO-LITE MEANS PRECISION MANUFACTURING

Thermometers and Gauges

Precision-built industrial pressure gauges, thermometers, recording gauges, and other types.

Wire and Cable

Magnet wire, high and low tension cable, flexible cords and cord sets. All types of insulations.



LANDS SAKE WHAT WILL THEY THINK OF NEXT!

As the horseless carriage made its first erratic bow and coal oil lamps offered "matchless light", life must have seemed rich indeed.

What a world of difference 50 years have made ... especially to the granddaughter of the reader of these clippings shown below. Votes for women; packaged butter and bottled milk in every electric ice box; frozen foods and a washing machine so human it amazes you. The new emancipation ... and the new look ...

A phenomenal half century! And the power behind it? Largely distribution. Distribution of ideas ... mass distribution of goods. Publicity, promotion ... printing. Printing on newsprint, in catalogs, in magazines, on cartons and cases.

How much has all this contributed to what we cherish as the American Way? Who knows, exactly. But as you look at these nostalgic clippings, make your evaluation of what we owe to them and to the avalanche of advertising that followed ... and to printing ... and to its vehicle, paper. International Paper Company, 220 East 42nd Street, New York 17, N. Y.

Clippings from The Ladies' Home Journal, December, 1890; Scientific American, August, 1898.

AGENTS WANTED.
COMMON SENSE
BROOM HOLDER
BEST
IN THE WORLD.
NOTHING LIKE IT.
Sample mailed on receipt of 15c.
Over 100,000 sold.
LATEST IMPROVED
Western Washer.
This is no snare, but is a first-class article. If not what you want, your money will be returned.
IT WILL
SAVE YOU LABOR AND TIME.
Agents Wanted EVERYWHERE.
Write for particulars, and mention THE LADIES' HOME JOURNAL.
25,000 SOLD this year.
HE HORTON M'F'G CO., Ft. Wayne, Ind
10 CENTS FOR A 3 Months' Trial
THE HOME QUEEN
Now in its Sixth Year.
A paper you are SURE TO LIKE if you once read it.
Full of WOMEN'S TALK and things which every woman wants to know.
Recipes, Dress-Making, Knitting, Fancy Work, HOME FURNISHING, SHORT STORIES, Mothers', Children's, Health, and Housekeepers' Departments.
Plain, Practical, CLEAN. Not an objectionable line in either reading or advertising.
The Rochester Lamp.
Perfect in Construction.
Artistic in Design.
Matchless in Its Light.
A good lamp is simple; when it is not simple it is not good. "The Rochester" is made in three pieces only, and a written guarantee goes with every lamp. We have 2,000 varieties. If the lamp dealer hasn't the genuine Rochester, and the style you want, send to us for illustrated catalogue (and reduced price-list), and we will box and send you any lamp safely by express.
ROCHESTER LAMP CO., 42 Park Place, New York
LADIES' BOOTS
ONLY $2.00
Retail everywhere for
Sizes, 2½ to 8, B, and EE widths.
these Boots in ei
or Goat. Posta
on re
Send
list.
CONSUMERS BOOT & SHOE CO., Box 3305, Bos
Better than Horse or Bicycle
One of the most delightful of modern possessions is a motor carriage. No danger of overworking a horse or of its bolting.
The Winton Motor Carriage
is in every respect a well-built conveyance. It is of pleasing design, finished in Brewster green, with leather cushions and nickel trimmings. Driving mechanism concealed. Single lever control. Speed from 3 to 20 miles an hour, at driver's option. Suspension Wire Wheels, Pneumatic Ball Bearings. Price list sent free on application.
Price $1,000. No Agents.
CARRIAGE CO., Cleveland, O.

INTERNATIONAL PAPERS

For Printing and Converting

FIFTY YEARS OF PAPER MAKING

PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

Series of Seven Forms used by Purchasing Department of The Wayne Pump Company, which includes debit memo and credit memo request form

ORIGINAL PURCHASE ORDER

Wayne

THE WAYNE PUMP COMPANY
FORT WAYNE 4, INDIANA

194

Actual size 8½" x 11"

THIS PURCHASE NUMBER MUST APPEAR ON ALL INVOICES
NO.

ACCT. NO.

QUANTITY	DESCRIPTION OF MATERIAL WANTED	PRICE
	SHIP: CHEAPEST WAY F.O.B.	

PART OR PRINT NUMBER, AS SHOWN ON THIS ORDER, MUST BE SHOWN ON YOUR INVOICE.

IMPORTANT

RECEIVING DEPT. HOURS 7:00 A. M. TO 3:30 P. M. EXCEPT SATURDAYS

PLEASE RENDER INVOICE IN TRIPLICATE, PRICED.
FORWARD BILL OF LADING THE SAME DAY SHIPMENT IS MADE.

CONDITIONS

CONDITIONS OF PURCHASE AS QUOTED ON BACK OF THIS ORDER ARE MADE A PART OF THIS PURCHASE AGREEMENT AND MUST BE OBSERVED CAREFULLY TO INSURE THE PROPER EXECUTION OF THIS PURCHASE ORDER.

THE WAYNE PUMP COMPANY

BY_____
PURCHASING AGENT

RETURN ATTACHED ACKNOWLEDGMENT COPY PROMPTLY, PLEASE

ACKNOWLEDGMENT OF THIS ORDER SHALL BE CONSIDERED AS ACCEPTANCE OF THE CONDITIONS AS PRINTED ON THE BACK THEREOF.

DATE_____ 194____

WE ACKNOWLEDGE THE ABOVE ORDER AND WILL SHIP_____

ACCEPTED_____

RETURN THIS COPY IMMEDIATELY SHOWING DEFINITE SHIPPING DATE ON EACH ITEM

BY_____

Purchase order form and lower section of vendor's acknowledgment copy. The conditions specifically mentioned on the face of the purchase order and also in the vendor's copy, are reproduced in accompanying text.

Here is series of forms used by the Purchasing Department of The Wayne Pump Company, manufacturers of service station, bulk station and garage equipment, Fort Wayne, Indiana. They were supplied for use in the Forum by H. W. Buehler, purchasing agent, and the lot includes the following: Purchase Order, Requisition, Request for Quotation, mimeographed Request for Credit-Debit Memorandum; material record card, and Purchase Order Revision.

Nine copies of the Purchase Order are prepared, the last one being on bristol board, with calendar along right edge for follow-up. There are two copies for the vendor, one being an Acknowledgment copy, and copies for purchasing, accounting, receiving and others concerned.

It will be noted that the original copy of the purchase order emphasizes that "conditions of Purchase as quoted on back of this order are made a part of this purchase agreement" ***, and the vendor's acknowledgment copy specifical-

(*Please turn to page 220*)

(*Forms Forum continued from page 219*)

Form 419 RE-

Request For Quotation

THE WAYNE PUMP COMPANY
Purchasing Department
FORT WAYNE, INDIANA

Date.....

To: .....

Actual size 8½" x 11"

.....

THIS IS NOT AN ORDER

Please Note Carefully

1. Fill in complete information before returning.
2. Return on or before time specified.
3. The right is reserved to accept all or part of your quotation.
4. If substitutes are offered, make full explanation.

Please Offer Your Lowest Price Not Later Than.....on Goods Specified.

(All Quotations Must Be Made on This Form.) .....Purchasing Agent.

Part Number	Quantity	ITEM AND SPECIFICATION	Unit	List Price of Unit	Discount Offered

To Be Shipped To:.....

.....

.....

By { Parcel Post / Express / Freight } Whichever Is the Cheapest.

1. We propose to furnish these items by.....19..... These prices are quoted F.O.B.....
2. Give terms and cash discount allowed.....
3. Our prices { Are / Are Not } include containers.
4. Our containers { Are / Are Not } returnable.
5. Packing and delivery charges will not be allowed unless provided in bidder's quotation.

Date Returned .....Signed.....

INQUIRY Nº 9109

The Request for Quotation is prepared in triplicate, two copies being sent to supplier one of which is marked "Bidder Retain this Copy".

ly states that "Acknowledgment of this order shall be considered as acceptance of the conditions as printed on the back thereof." The conditions are as follows:

(1) The acknowledgment copy of this order must be properly filled out and returned to us promptly.

(2) There is no verbal understanding or agreement different than herein stated.

(3) Forward bill of lading same day of shipment.

(4) No charges will be allowed for boxing unless previously agreed upon.

Quality

(5) Quality: All material furnished must be according to applicable drawings, specifications, sample and/or other description given and must be free from defects. All materials are subject to buyer's inspection and acceptance after delivery in buyer's plant. In case of disputes the methods outlined by the American Society for Testing Materials will be followed. All defective materials will be promptly returned at your expense and credit taken on vouchers. No materials returned as defective to be replaced without our formal replace order.

(6) We reserve the right to cancel any portion of this order if not filled as

(*Please turn to page 222*)

Two copies of Purchase Order Revision are sent to the supplier who is asked to acknowledge acceptance of the revision on "Blue acknowledgment copy". The Production and Receiving departments are also furnished with a copy.

VENDOR'S COPY

FORM 217

PURCHASE ORDER REVISION
FROM
THE WAYNE PUMP COMPANY
PURCHASING DEPARTMENT
FORT WAYNE, 4, INDIANA

194

THIS PURCHASE NUMBER MUST APPEAR ON ALL INVOICES
NO.

PURCHASE ORDER
REVISION

THE FOLLOWING REVISION AMENDS AND SUPERSEDES OUR ORIGINAL PURCHASE ORDER SHOWN ABOVE, AND IS FINAL UNLESS YOU ARE FURTHER INSTRUCTED IN WRITING. SHIP ONLY AS PER SCHEDULE SHOWN.

DETAIL OF REVISION	PRICE
ABOVE NUMBERED ORDER COVERING ..... (BAL UNSHIPPED .....)	
IS HEREBY REVISED TO ..... TO BE SHIPPED ON THE FOLLOWING SCHEDULE:	

PLEASE ACKNOWLEDGE YOUR ACCEPTANCE OF THE FOREGOING REVISION ON BLUE "ACKNOWLEDGMENT COPY" PROVIDED FOR THAT PURPOSE AND RETURN PROMPTLY TO THE ATTENTION OF THE SIGNER.

THE WAYNE PUMP COMPANY

BY.....
PURCHASING AGENT

How to save time thru . . .

MINIMUM WRITING

Minimum writing . . .
Minimum handling . . .
Minimum looking . . .
with UARCO Business Forms

UARCO BUSINESS FORMS waste no time at all! A single writing completes the form and—zip! copies are in the hands of all concerned. No re-copying —*here they are*—copies for the customer, the office, the factory, the shipper . . . everyone!

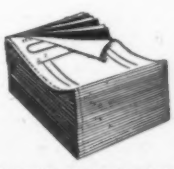
It works the same no matter which Uarco form you use. It works no matter *how* it's used . . . filled out with a pencil, typewritten, or run through a business machine. *Always,* one writing does it!

How do you tell which Uarco forms will do your job best? Just call your Uarco Representative. He'll make a complete survey of your Business Forms at no cost to you. UARCO INCORPORATED, Chicago, Ill.; Cleveland, Ohio; Oakland, Calif.; Deep River, Conn. Offices in All Principal Cities.

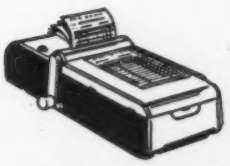
For Instance . . .

Uarco Speed-O-Form may be the type for you. In just five seconds any typewriter can be turned into a continuous billing machine. No aligning, no carbon stuffing—the typist has only to type.

SINGLE SET FORMS



CONTINUOUS-STRIP FORMS
FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS



AUTOGRAPHIC REGISTERS
AND REGISTER FORMS

UARCO
INCORPORATED
BUSINESS FORMS

(*Forms Forum continued from page 220*)

Date_____ THE WAYNE PUMP COMPANY SUPPLEMENT

PRODUCTIVE PURCHASING REQUISITION

Req. No.

Order From_____ P. O. Date_____

Address_____ P. O. No. ☐

Actual size 8½" x 5½" Confirming ☐

Ship Via_____ F.O.B._____

Terms_____ Acct. No._____

Quantity	Description	Price	Unit

DELIVERY REQUIRED

	Jan.		May		Sept.		Req. By_____
	Feb.		June		Oct.		Approved_____
	Mar.		July		Nov.		Buyer_____
	Apr.		Aug.		Dec.		Approved_____

Form No. 486 Sup.

CREDIT

REQUEST FOR DEBIT MEMORANDUM

THE WAYNE PUMP CO.
FT. WAYNE 4, IND.

SHIP TO — DATE

ADDRESS — REQUESTED BY

CHARGE TO — VIA

ADDRESS — SHIPPED Collect ☐ Prepaid ☐

QUANTITY	OUR PART NO.	DESCRIPTION	Price	Amount

REASON

ACCOUNT NO._____

Form 443

The Request for Credit/Debit Memo is a mimeographed form

FORM 2010 CARD____

SIZE OR SYMBOL NO. WPC ARTICLE

8" x 5"

ORDER DATE	ORDER NO.	QUANTITY ORDERED	LIST PRICE	DISCOUNT	F. O. B.	VENDOR	FINAL DELV. DATE	QUOTATIONS

Purchase Record Card used in Cardex system is 8" x 5"

specified. Shipments are subject to postponement.

(7) Render invoices in duplicate on day of shipment, accompanied by bill of lading, one copy of invoice to be priced and one copy not priced. All invoices, packing slips and packages must show our order number, symbol number, how material is shipped, number of packages, package number and point of shipment. Also shipments must include packing slips.

(8) Neither party shall be liable for failure of performance due to strikes, fires, accidents or other causes beyond its control, and affecting its operation.

(9) The quantity ordered must not be exceeded without our written permission.

Price

(10) If price is omitted on order, it is agreed that your price will be the lowest prevailing market price.

(11) Unless otherwise agreed in writing, the seller of these goods agrees to assume the defense of any suit for infringement of any patent, or for unfair competition, brought against the Wayne Pump Company, or its vendees or users, mediate or immediate, based upon such goods constituting an infringement, or the sale or use of such goods constituting an action of unfair competition, and to indemnify said company, or said vendees or users, as to all claims arising out of any decree, award or payment of damages and/or costs in connection with any such suit. If use of such goods is prevented by injunction, or such goods are held by an infringement, or their sale or use an act of unfair competition, the seller shall, at its expense, procure for said company, its vendees or users, the right to continue to use such goods; or replace the same with non-infringing goods; or modify the goods so that they become non-infringing; or remove such goods and refund the purchase price and the transportation and installation costs thereof.

(12) It is understood that the seller of the goods covered in this order warrants that they have been or will be produced in compliance with the requirements of the Fair Labor Standards Act of 1938.

The forms are quite self-explanatory. The Request for Quotation is mailed in duplicate, one copy being retained by the bidder for his record.

Likewise, the Purchase Order Revision form which carries that description in large red type, is sent to the vendor in duplicate, the latter being an acknowledgment copy of blue stock. Copies of this form are also furnished production and receiving departments.

(*Please turn to page 232*)

COLOR PHOTO BY RALPH RAWLINGS—UNDERWOOD

Tip from the track...USE COLOR!

COLOR DOES MORE than add to the excitement of a race. Color makes it possible for you to identify rider and horse and to follow the race from start to finish.

Color can serve in very much the same way in more practical, day-to-day uses.

Your business forms are a good example. The easy-to-identify colors of HOWARD BOND distinguish each page of multiple business forms, greatly speed recognition of units, facilitate distribution and filing. And for other business printing, HOWARD BOND colors offer exciting opportunities to increase visibility, attention, and appeal—without increasing cost.

See HOWARD BOND colors, as well as *whitest* white. Your printer —and leading paper distributors across the nation—will be pleased to show you samples.

HOWARD PAPER MILLS, INC. • HOWARD PAPER COMPANY DIVISION, URBANA, OHIO

Howard Bond

"THE NATION'S BUSINESS PAPER"

COLOR PHOTO BY RALPH RAWLINGS—UNDERWOOD

UNIFORMITY . . . Buyers of good advertising—and the printers who serve them—rightly demand high standards of the paper they buy. Perfect workability. Predictable uniformity. Honesty of reproduction. In Maxwell Offset they find these characteristics to such pronounced degree that with advertisers and printers alike it has grown to its present stature as one of the most consistently specified offset papers in America.

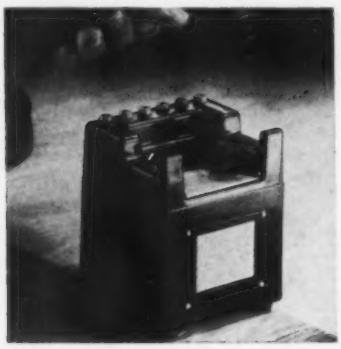
HOWARD PAPER MILLS, INCORPORATED
MAXWELL PAPER COMPANY DIVISION • FRANKLIN, OHIO

Maxwell Offset

For uniformity—in finish, in strength, in ink consumption, in whiteness or color conformity

INTERCOMMUNICATION SYSTEM WORKS ON SOUND POWER

This intercommunication system made by United States Instrument Corp., 409 Broad St., Summit, N. J., works on the principle of sound power, by which the energy of the voice is converted into a small electric current which will travel miles, becoming sound waves reproducing the speaker's voice when transmitted to a sound-powered receiver.



The complete system accommodates six stations. The ringing signal is produced by means of an interruptor, and is operated by pushing the desired button. Since the ringing-circuit interruptors use practically no current, it is claimed, two flashlight batteries within the base suffice for the purpose. Control and ringing switches and terminals of the set are contained in a housing of Tenite plastic. The set can be mounted on wall or side of desk by means of an L-shaped metal bracket, or it can be used unmounted by reversing the bracket so it is concealed within the base.

NEW SALES MANAGER FOR IDEAL

Charles Geo. Beck has taken charge of sales for the Ideal Stencil Machine Company, Belleville, Ill. He was at one time sales manager of a large industrial motion picture distributing firm, and later managed sales in his own business.

DOUGLAS NAMED IBM DIRECTOR

Edward M. Douglas, vice-president of International Business Machines Corp., was recently elected a director of the company. He joined the company in 1925 as a systems serviceman.

ERNEST JOINS FLORIDA PULP & PAPER CO.

Albert Ernest has joined the Florida Pulp & Paper Co., wholly-owned subsidiary of St. Regis Paper Co., in an executive capacity and will be in charge of land acquisition and timber production along the Atlantic seaboard. He was formerly president of the Dixie Wood Co., and prior to that manager of the Woodlands Division of Union Bag & Paper Corp. Mr. Ernest will maintain an office in Savannah, Ga.

(*Please turn to page 226*)

What every P.A. should know

Any secretary will be glad to tell you that all carbon papers are not alike. Webster's Micrometric, for example, is the only carbon paper with the numbered scale that warns typists when they approach the bottom of a page . . . assures neater spacing of letters and reports . . . results in faster work . . . helps secretaries avoid smudged fingers from carbon backs.

Yet Micrometric costs no more than any other quality carbon paper.

Factory warehouses from coast to coast mean quick delivery of Micrometric and other Webster products to over 1500 dealers — and to you. So order "Webster's" the next time you want carbon paper or typewriter ribbons; duplicating carbon papers and accessories, carbon paper ribbons for photo-offset work; ribbons and carbons for Elliott-Fisher, Addressing, Adding and International Business Machines. Consult your nearest dealer, or write to F. S. Webster Company, 7 Amherst Street, Cambridge 42, Mass. Warehouses in New York, Philadelphia, Pittsburgh, Detroit, Chicago, San Francisco.

Better Buy . . .

WEBSTER'S

Micrometric Carbon Papers and Typewriter Ribbons

MULTIKOPY Reg. U.S. Pat. Off. MICROMETRIC MULTIKOPY AN 86 NOISELESS

49'RS

Still means GOLD

to STATIONERS

Roberts Model 49 represents to the numbering industry, the hardiness of the original Forty Niners. Light weight, precision made, this model has been the most sought after numbering machine of the century.

3 movements self inking guaranteed

ROBERTS
MODEL 49
$12.00 list

Immediate Delivery

ROBERTS
NUMBERING MACHINE CO.
700 JAMAICA AVE.
BROOKLYN 8, N. Y.

ESLEECK INTRODUCES NEW AIR MAIL BOND

Esleeck Manufacturing Company, Turners Falls, Mass., has introduced its new air mail bond, a watermarked 50% rag, opaque paper. It is made in Sub. 11 white, cockle finish, in sizes 17 x 22 and 22 x 34. Samples will be sent upon request.

PAYROLL MACHINES

The machines illustrated are used in payroll systems, developed by the National Cash Register Company of Dayton, Ohio, for handling pre-payroll and payroll work, labor and material cost distribution, and preparation of tax forms and reports. The system provides a payroll check and a pay statement showing printed figures for the gross pay, amount of each deduction and the net amount of the check for each employee. Also, the system prints a complete payroll summary, and a detailed employee's earnings record, showing the same printed data that is on the check and pay statement, and the distribution of costs by department, thus eliminating direct labor distribution work formerly performed by cost department and factory clerks.

Machine at Right is the Class 2000, and that at the Left is the Class 3000. They are claimed to be the answer to any industrial payroll problems.

The two machines are the Class 2000, and the Class 3000. The former mechanically computes and prints five balances on each employee's pay statement, namely, gross pay, net pay, total tax withheld to date, total deducted for savings bond, and total gross earnings for year to date. As these earnings are being printed, individual earnings and deductions are accumulated automatically in separate totals inside the machine. When the Class 2000 is not being used to prepare payroll work, as many as 42 totals are availble for distribution of material and labor costs.

The Class 3000, when used in conjunction with the Class 2000, is said to be ideal for daily labor distribution—direct and indirect—pre-payroll processing of labor tickets, and setting up payroll controls. It may also be used to post accurate accounts receivable and accounts payable records and for making special reports.

National states that the two types of machines, when used together, are the answer to any industrial payroll problem.

(*Please turn to page* 228)

Old Town

RIBBONS
CARBONS
Duplicating
Supplies

For those who prefer the best

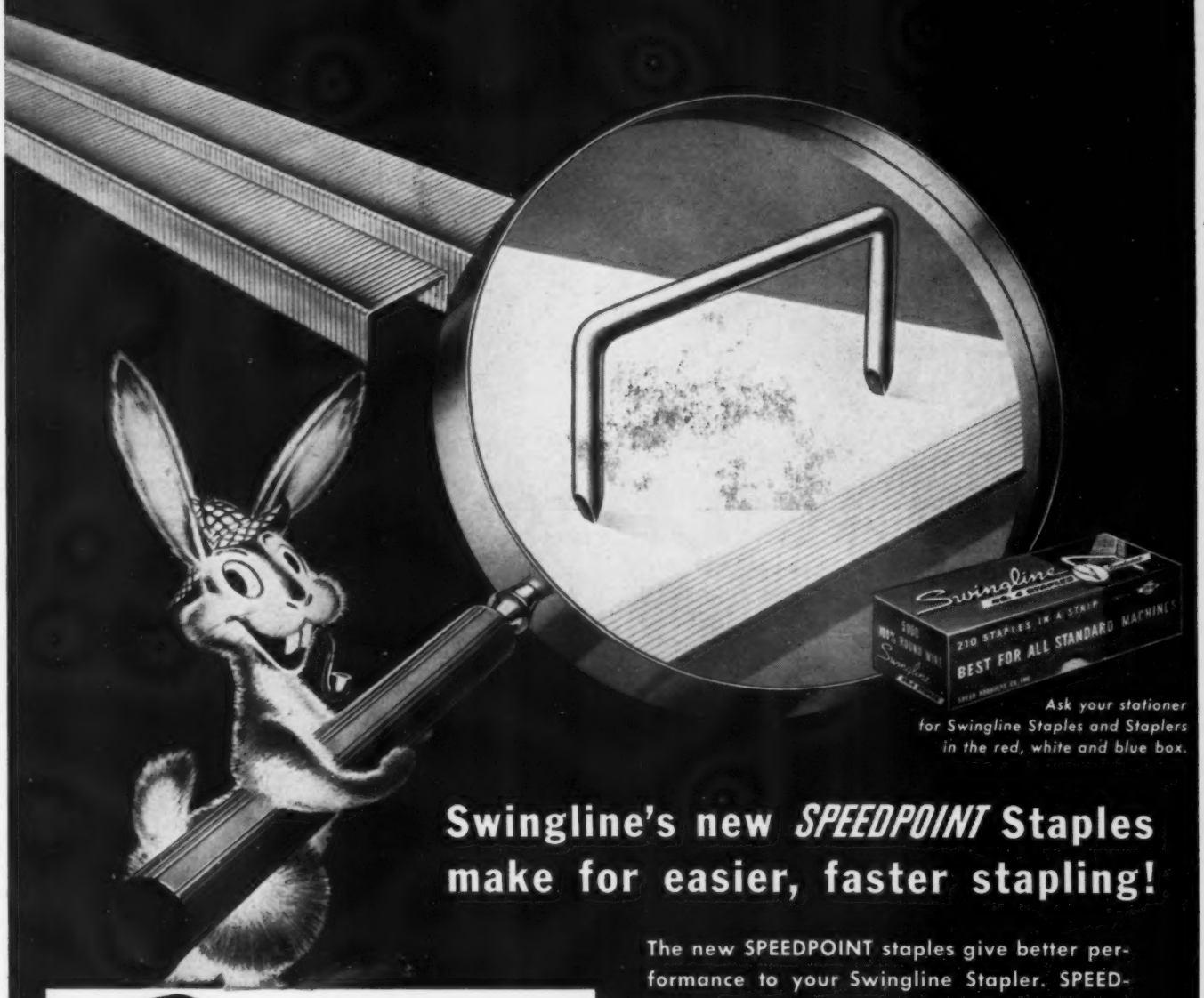
BROOKLYN 17, N. Y.

THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS
Use
ESLEECK
THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

It's New! It's Pointed! It's Extra-Sharp!



Ask your stationer for Swingline Staples and Staplers in the red, white and blue box.

Swingline's new *SPEEDPOINT* Staples make for easier, faster stapling!

"Now we're in the groove, boss!" That Swingline Stapler loads quicker, works slicker because of its open, trouble-free channel. Handsome new model in Chrome and Grey. Made of hardened steel to last a lifetime.

The new SPEEDPOINT staples give better performance to your Swingline Stapler. SPEEDPOINT extra-sharp staples even penetrate wood, light sheet metal and 40 sheets of paper. SPEEDPOINT clinches 100-and-1 household and office stapling problems. No buckling, no jamming, because SPEEDPOINT staples are made with 100% round wire for strength, and pointed for penetration. For your Swingline Stapler, or any standard stapler, ask your stationer for the new Swingline SPEEDPOINT 100% round wire staples.

Swingline SPEED
STAPLERS STAPLES

SPEED PRODUCTS COMPANY, INC., LONG ISLAND CITY 1, N.Y.

Good News for File Clerks--

and for executives who want to cut filing and finding time in half—

Above. Pendaflex hanging folders coming off the new production line —ready for more installations like the one shown at the right.

Oxford

PENDAFLEX* hanging folders *are plentiful again!*

It's good news for filing departments everywhere, that Pendaflex hanging folders are off the scarce list!

Now you can equip every letter and legal size filing cabinet in every department with Pendaflex hanging folders, *at once.*

What a difference it will make!

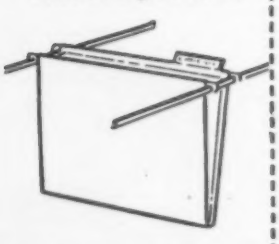
For Pendaflex takes the fumble out of filing.

Wherever installed, users report

20% to 50% faster finding and filing.
Misfiling practically eliminated.
Personnel released from the drudgery of filing, for many hours of more productive work.

Your office supply dealer will install a trial drawer of Pendaflex in your busiest filing cabinet. If Pendaflex isn't all we say, your money will be refunded!

No new cabinets necessary. Inexpensive frame fits in file drawer, and folders hang on frame.



OXFORD FILING SUPPLY CO., INC.
342 Morgan Avenue, Brooklyn 6, N. Y.

Please send Pendaflex catalog, and name of nearest dealer.

NAME _____

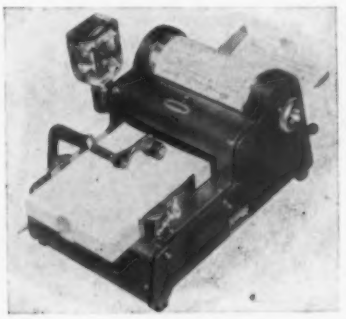
ADDRESS _____

CITY _____ STATE _____

*Trade Mark Reg. U. S. Pat. Off.

ELECTRIC LIQUID DUPLICATOR

A new Electric Copy-Rite liquid duplicator is announced by Wolber Duplicator & Supply Co., 1201 Cortland St., Chi-



cago 14, Ill. Among the features of the new unit are an automatic master sheet lock and release, and facility for loading a full ream of copy paper from the side without removing the automatic paper feed. The unit embodies roller moistening without wickes or pumps. A twin unit, manually operated, is also available.

TELEPHONE RECORDER

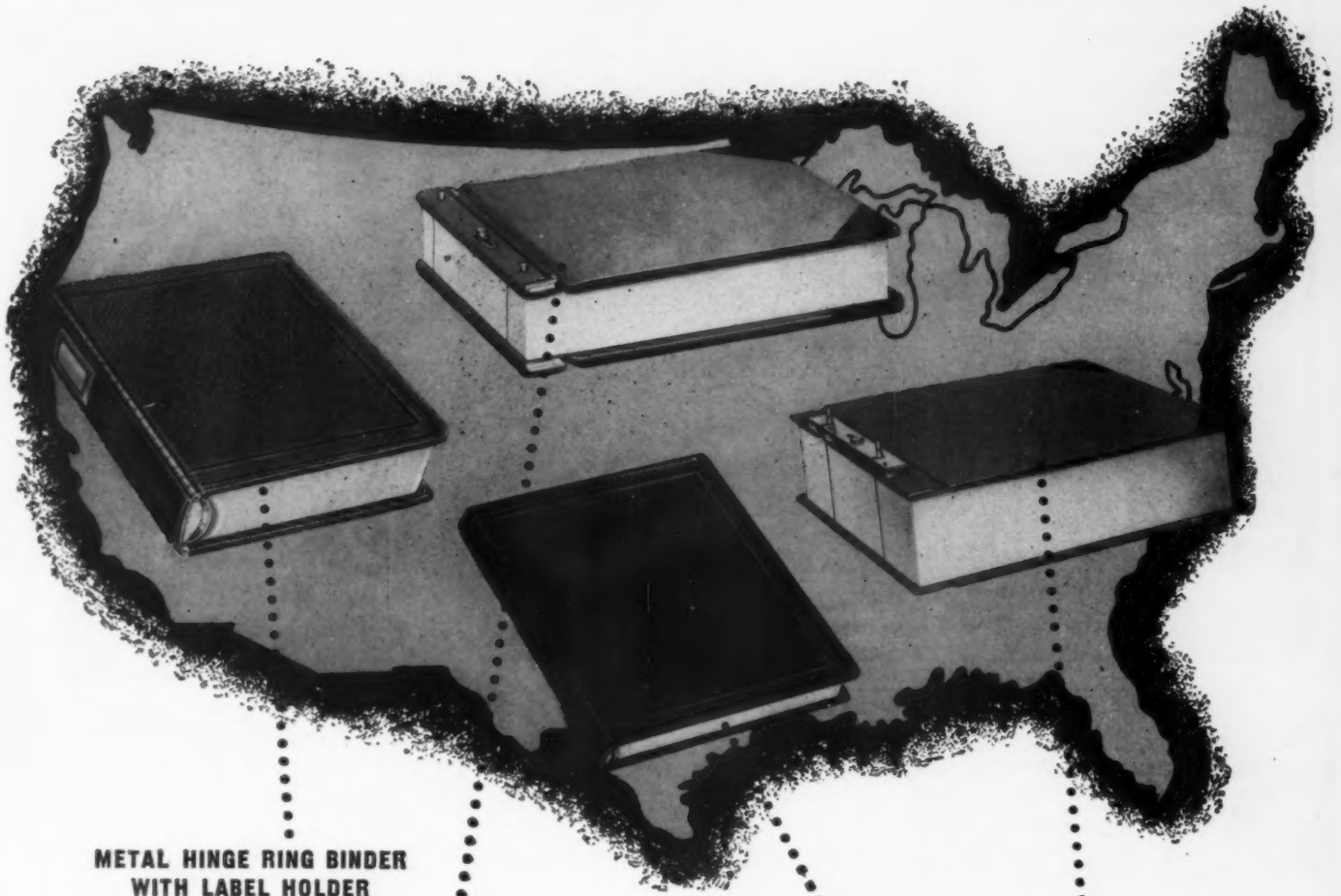
The Miles Reproducer Co., Inc., 812 Broadway, New York, N. Y., has developed a midget telephone induction in-

terceptor know as the Telemike, said to require no physical contact with the telephone and claimed to pick up both sides of a telephone conversation for recording purposes or for group loud-speaker listening. Used in conjunction with the Miles Filmgraph Recorder-Reproducer, the Telemike can make two- or multiway telephone recordings on a thin film. A device known as the Audio Self-Start-Stop Kontrol is built in the Filmgraph Recorder-Reproducer whereby the transmission of voice through a microphone or telephone causes the Filmgraph to oprate; when the voice stops the Filmgraph stops.

Telemike is designed to operate with the standard radio receiver, phonograph or microphone amplifier or any type disc-wire-film-cylinder electric recorder for group loud speaker listening or recording. It is 1″ in diameter and ¼″ thick, and fits over the outside of the earpiece of the standard desk or wall type telephone. It may be placed inside or underneath the desk cradle type telephone or concealed inside of the ringer box.

(*Please turn to page* 230)

North, South, East or West, Federbush Binders are the Best!



METAL HINGE RING BINDER WITH LABEL HOLDER

Style RJM. **Binding: Full Black Levant Grain Imitation Leather, blind tooled; stiff covers; metal parts highly nickel plated with triggers.**

FABRIC HINGE RING BINDER

Style RJ. **Binding: Black Imitation Leather, blind tooled; stiff covers; metal parts highly nickel plated with triggers.**

SECTIONAL POST BINDER

Toplock — Style FR. **Binding: Finest Grade Blue Slate Canvas, Red Leather Corners; medium weight binder board with rounded corners; end caps of highly nickel plated steel.**

SECTIONAL POST BINDER

Slotlock — Style SB. **Binding: Blue Slate Canvas, Black Imitation Leather Corners; medium weight binder board with rounded corners; canvas hinge; slotted locks.**

The FEDERBUSH Company, Inc.

91 SEVENTH AVENUE • NEW YORK 11, N. Y.

When It Comes to Binders — Come to Binder Headquarters . . . or Write for Our Complete Catalog.

LETTERS ARE *meant to be read!*

To keep your letters out of that popular file, the wastebasket... put your story on a subtly *different* paper—a paper that matches the importance of your story. Ask your printer. Because he is wise in the wherefores of paper it's more than likely he will recommend that you use Rising Line Marque.

Rising *Line Marque*

✓ 25% rag ✓ exclusive pattern inspired by Italian Handmade paper ✓ 2 weights
✓ 3 pastel shades and white
✓ envelopes in 6 sizes
✓ excellent printing surface for die-stamping, lithography, gravure or letterpress

WHEN YOU WANT TO KNOW... GO TO AN EXPERT!

Rising Papers

Rising Papers

ASK YOUR PRINTER... HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

Redifixt 1948

W-2

Withholding Tax Forms

Best of all for YOU! Federal, State and Social Security all in one swift operation. Send for new samples and our schedule of prices.

E-Z DIAL TAX FINDER

SS1B Federal Forms
Employees W-4 Forms on Card
Kraft W-2 Window Envelopes

We also manufacture all types of continuous and REDIFIXT One-time carbon forms, on the latest post war Rotary Equipment.

WRITE FOR DETAILS ON YOUR LETTERHEAD

CONSOLIDATED Business Systems, Inc.

Dept. 006
30 Vesey Street New York City 7

IF YOU ARE NOT NOW RECEIVING A PERSONAL COPY OF PURCHASING EACH MONTH . . .

— drop a line to Reader Service Department, Purchasing, 205 East 42nd St., New York 17, and we will enter your subscription promptly—price $4 for one year. $7 for two years. You will then get your copy of PURCHASING promptly and will be able to clip the valuable articles in it for your personal reference files.

NAMED SALES MANAGER OF CONSOLIDATED STAMP

Louis H. Tavernier, former president of Fulton Specialty Company, has been made sales manager of the Consolidated Stamp Manufacturing Co., which operates factories at Spring Valley, N. Y., Norwood, N. J., and Chicago, Ill., producing marking equipment, self-inking devices, and special machines and marking accessories. Mr. Tavernier recently retired from the Fulton organization with which he had been associated for 30-odd years. His headquarters are at 15 Dey Street, New York, N. Y.

MOTOR-DRIVEN FLUID DUPLICATOR

New motor driven fluid duplicator is announced by Rex-O-Graph, Inc., 3754 N. Palmer St., Milwaukee, Wis. The machine is operated by a combination of a single lever and push buttons, and stopped automatically by an interior counter-switch mechanism. When required

number of copies is run, an audible signal is heard, and feeding is stopped automatically. The machine also offers automatic paper centering, 100% roller moistening, feeding, counting, master copy ejection, and copy stacking.

NEW ROYAL MANAGERS AT WASHINGTON AND BOSTON

Office typewriter sales manager David B. Starrett of the Royal Typewriter Co. has announced that John B. Eccles, former assistant sales manager, office typewriter division, has been appointed district manager at Washington, D. C. He succeeds George H. Palmer, who has been transferred to the district managership at Boston, Mass. Mr. Eccles started with the company in New York in 1924. Mr. Palmer joined the company in 1921, at Boston.

SAWIN TAKES DUAL JOB AT SHEPPARD ENVELOPE CO.

Henry A. Sawin, whose first job was as a paper boy with the Sheppard Envelope Co., Worcester, Mass., recently returned to the company in the dual capacity of director of personnel and plant engineer. He had been employed with the Wyman-Gordon Co., Worcester, for the past 11 years.

NEW PAPERMAKING CAPACITY

A postwar papermaking capacity increase of 3,258,860 tons annually is in the making, according to an announcement by the American Paper and Pulp Association. Approximately one-half .of this increase is completed and the other half is expected to be ready in 1948 according to a review of capacity data by the association. Estimated production for 1947 is 21,000,000 tons. Capacity as of Dec. 31, 1948 is figured at 23,540,910 tons, according to association figures.

FINGER MOISTENER

Illustration shows the Pike Glaswik finger moistener made by E. W. Pike & Co., Elizabeth, N. J. The moistener is equipped with a fiberglas washable wick

which absorbs just enough water from the clear glass container, to moisten fingers for quick, accurate paper counting and sorting.

OFFICE MANAGEMENT ASSOCIATION IN NEW LOCATION

The address of the headquarters of the National Office Management Association is now 12 East Chelten Avenue, Philadelphia 44, Pa.

DUAL-PURPOSE COTTON FIBRE PAPER

A dual-purpose cotton fibre paper that is said to combine the qualities of a text and a letterhead paper, called Weston's Opaque Script, has been added to the line of Byron Weston Co., Dalton, Mass. It is described as a white opaque paper which is made in both laid and wove finish, having a custom-made appearance suited for social and business correspondence and printed pieces. By combining into one paper and one line all the features of both text and letterhead papers, including sizes and weights as well as writing and printing qualities, the paper is claimed to give the designer a free choice of material and reproduction processes including letterpress, offset, die stamping and engraving.

(*Please turn to page* 234)

SoundScriber turns interruptions into opportunities!

Ever occur to you that interruptions at your desk are a sign of a busy business? . . . Effectively handled, they can increase your business volume—your profits.

Tens of thousands of SoundScriber users turn interruptions into opportunities—*constantly!*

SoundScriber's *proved* capacity for taking the lag out of business communications and stepping up dictation routine outstrips that of every other system of dictation in business today.

SoundScriber frees the executive *and his secretary* from time-consuming detail—saves money—relieves office tension!

With SoundScriber at your elbow you'll welcome interruptions, instead of bewailing them.

Let us prove SoundScriber's advantages *to you!* Send in the coupon NOW!

SoundScriber discs hold up to 30 minutes of dictation—are easily indexed, routed, filed or mailed. Radio-clear quality insures accurate transcription. Low first cost, lower operating cost.

SOUNDSCRIBER
Trade Mark
ELECTRONIC DICTATING AND RECORDING EQUIPMENT

To find out how SoundScriber applies to *your* business, phone the nearest distributor, listed under "SoundScriber" in your classified telephone directory. Or mail the coupon.

An Easier Day
THE DO/MORE WAY!

BUILD YOUR BODY AS YOU SIT

Feel refreshed at "quitting time" through *correct* sitting. Business and professional men prefer DO/MORE chairs because they help retard fatigue... offer restful relaxation without slumping... *encourage good posture.* Better health, and improved appearance are both factors in Domore's contribution to an easier working day.

Write... *for the FREE booklet, "Physical Fitness and Personal Appearance."*

DO/MORE CHAIR COMPANY, INC.
DEPT. 212, ELKHART, INDIANA

DO/MORE® SEATING SERVICE

No Scuffing
No Smudging
When you use
Millers Falls
EZERASE
THE NEW, PATENTED PAPER FOR QUICK, CLEAN, ERASING

With an ordinary pencil eraser mistakes in typing can be quickly erased without leaving telltale unsightly marks or smudges. For Ezerase has a new, patented surface that works like magic!

WRITE TO-DAY

for a sample book of test sheets in all weights. Make a test and see for yourself!

MILLERS FALLS PAPER CO.
MILLERS FALLS, MASS.

(*Forms Forum continued from page 222*)

A Practical Purchase Order Form

The accompanying purchase order form is of much interest because of its simplicity and practical utility. It is used by the purchasing department of the Connecticut Manifold Forms Company, Hartford, Conn., manufacturers of business forms, and was furnished for use in the Forum by John Coolidge, treasurer and purchasing agent.

Five Copies

This form is of the snap-out type and consists of five copies, the last copy being on light bristol board. This is the purchasing department's working and record copy, the file of which is maintained alphabetically.

Distribution of the other four copies is as follows: Vendor, two copies, white and pink, the latter being vendor's acknowledgment copy; receiving department copy on yellow stock with form at bottom for recording receiving information and return of form to the purchasing department; and the fourth on orange stock for permanent numerical file in the purchasing department.

PURCHASE ORDER

THE CONNECTICUT MANIFOLD FORMS CO.

CONTINUOUS FORM STATIONERY
CARBON INTERLEAVED FORMS

612 CAPITOL AVENUE
PHONE 2-5644

Hartford, Connecticut

To_ DATE No. 4102

WANTED

FOR

SHIP VIA JOB NO.

Please Acknowledge this order on copy attached, stating when you expect to make shipment.
Please Put this order number on all Shipping Labels, Invoices, B/L, and any related matter.

The Connecticut Manifold Forms Co.

PER

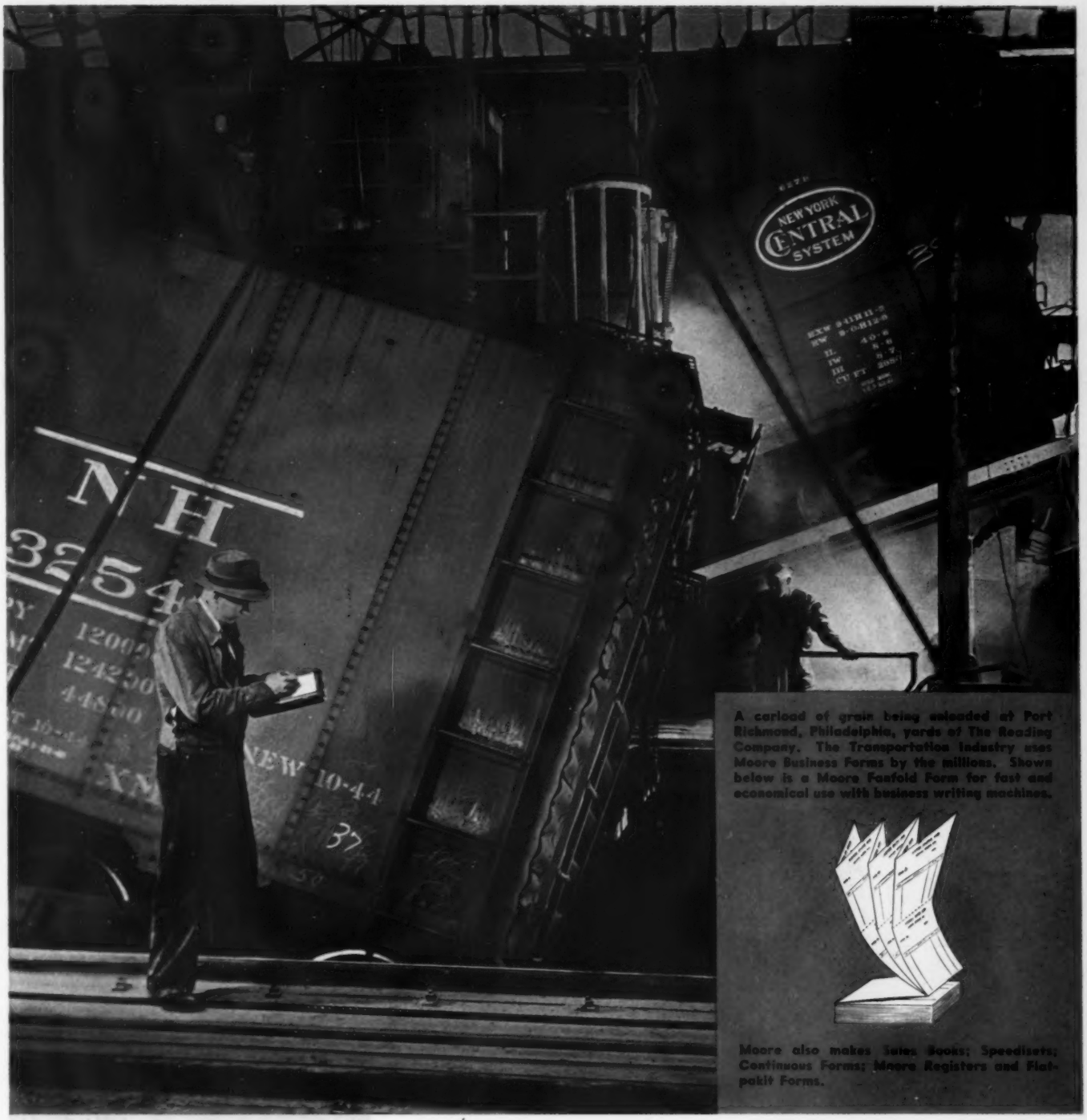
The receipt and acceptance of this order is hereby ACKNOWLEDGED and shipment will be made

VIA ON OR ABOUT 194 SIGNED FOR THE VENDOR

DATE RECEIVED	RECEIVED VIA	RECEIVED	WEIGHT	CHARGES

PERMANENT NUMERICAL FILE

FOLLOW UP		RECEIVED		INVOICES		
DATE	REMARKS	DATE	QUANTITY	DATE	QUANTITY	AMOUNT



A carload of grain being unloaded at Port Richmond, Philadelphia, yards of The Reading Company. The Transportation Industry uses Moore Business Forms by the millions. Shown below is a Moore Fanfold Form for fast and economical use with business writing machines.

Moore also makes Sales Books; Speedisets; Continuous Forms; Moore Registers and Flatpakit Forms.

These wheels rolled over a paper road

There's more than one way to unload grain. Here, they just shake the car and it empties itself!

Records of the grain's journey are kept on Fanfold *waybills*, details are checked on *Flatpakit forms*. Other, and varied, cargoes move by truck, all facts secure on Speediset *manifests*. Such *business forms*, made by Moore, lay down a smooth road of paper over which freight and passengers roll.

Moore Business Forms whittle costs sharply on all writing tasks. Wilson Storage & Transfer Company, Sioux Falls, South Dakota, use Moore 9-part Fanfold Freight Bills, "save about $3000 a year." The Reading Company, Philadelphia, make a considerable saving in time and money with Moore multi-copy forms.

Moore, supplying many thousands of business forms, may help bring important savings in *your* forms operations. Call your local Moore office, today.

MOORE BUSINESS FORMS, INC.

Factories in Niagara Falls, Elmira, N. Y.; Minneapolis, Minn.; Denton, Texas; Los Angeles, Emeryville, Calif. Sales Offices in over 200 cities from coast to coast, also factories and sales offices across Canada

Prominent Users of Strathmore Letterhead Papers, No. 75 of a Series

Du Mont, tops in television, chooses **STRATHMORE** *for its letterhead*

Pioneer and leader in the television industry, Du Mont developed the first cathode-ray tube, marketed the first television receiver, operates the world's first television network. Like many leaders of industry, Du Mont has chosen a Strathmore Letterhead Paper for their dignified business letterhead.

It is with modest pleasure that we add this brand-new industry to our collection of Strathmore friends. May we suggest that you might do well to look critically at your own stationery and follow so many examples of good business taste by having it redesigned on Strathmore?

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

AUTOMATIC PENCIL SHARPENER MOVES TO ROCKFORD, ILL.

Transfer of all general office functions from Chicago to Rockford, Ill. has been announced by Automatic Pencil Sharpener Co., Divsion of Spengler-Loomis Manufacturing Co. Executive, general sales, and accounting offices are now in the same city as the company's largest plant.

MAILROOM FURNITURE

The USPM sorting rack and utility cabinet illustrated are being marketed by Commercial Controls Corporation, Rochester, 2, N. Y. The sorting racks are made on a unit basis, each unit having three vertical divisions with

USPM Utility Cabinet with classifying racks and scale.

shelves adjustable on one-inch centers, shelves being furnished either with or without label holders. The mailroom table is just wide enough to accommodate two sorting racks and deep enough to provide ample working space for handling mail.

Sorting racks and mailroom table.

Furnishing convenient work space for the final preparation of mail for metering, the USPM utility cabinet has a raised shelf designed to hold a Model 100 letter scale at eye level. The top surface will accommodate one or two classifying racks, with plenty of space remaining for mail handling. The vertical dividers of the classifying rack are adjustable one one-inch centers.

This equipment is of metal construction in standard gray wrinkled finish. The top of both the table and the cabinet is of oil-tempered Presdwood.

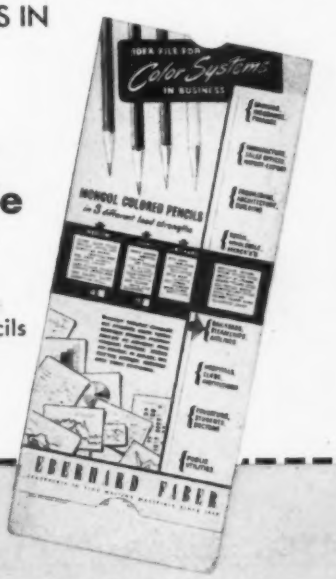
(*Please turn to page* 238)

Let *COLOR SYSTEMS* speed your paper work

Recently completed research, covering office systems in scores of major industries, has turned up 286 valuable ideas based on the most efficient use of colored pencils in business...ways of increasing efficiency—ways of getting work done *faster, better, and more economically.* All the facts are condensed in this handy mechanical index called "COLOR-SYSTEMS IN BUSINESS."

FREE copy of this valuable idea guide on request.

Prove to yourself how the 3 lead strengths of MONGOL Colored Pencils can be of substantial help in your business.



EBERHARD FABER PENCIL COMPANY
Department P-2, 37 Greenpoint Avenue,
Brooklyn 22, New York

Please send my FREE Idea Guide "COLOR-SYSTEMS IN BUSINESS"

NAME..... TITLE.....

BUSINESS.....

ADDRESS.....

CITY..... STATE.....

FREE new help for your business

MAIL THIS COUPON TODAY FOR YOUR COPY OF

COLOR-SYSTEMS

a comprehensive guide of 286 valuable ideas for every department

TO: EBERHARD FABER PENCIL CO.
DEPT. T-6, 37 GREENPOINT AVE.
BROOKLYN 22, N. Y.

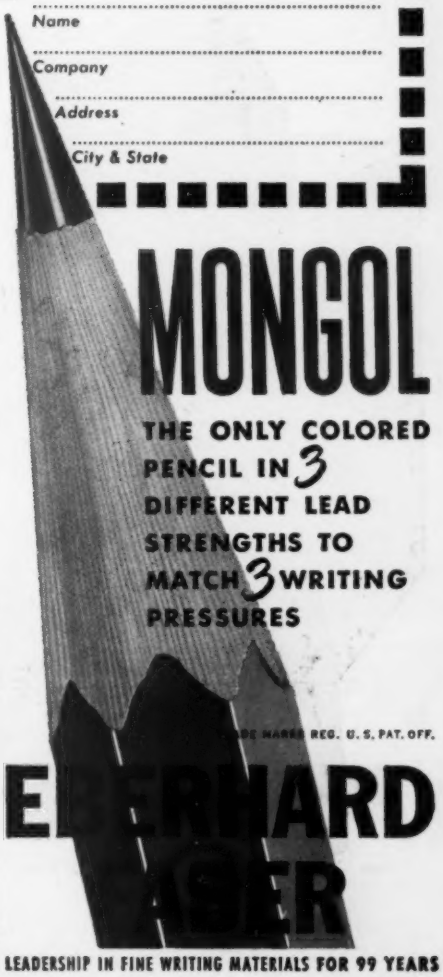
Gentlemen: YES! Send my FREE copy of "COLOR-SYSTEMS," the guide of organized ideas that tells how MONGOL Colored Pencils can be used in my business to speed up the paper-work.

Name.....

Company.....

Address.....

City & State.....



MONGOL

THE ONLY COLORED PENCIL IN 3 DIFFERENT LEAD STRENGTHS TO MATCH 3 WRITING PRESSURES

TRADE MARKS REG. U. S. PAT. OFF.

EBERHARD FABER

LEADERSHIP IN FINE WRITING MATERIALS FOR 99 YEARS

"Now That's What I Call Smooth Looking Equipment"

Jeff: *Smooth* is right.

Jim: What a difference good-looking new wood furniture makes. Why those old desks and chairs made the firm look outmoded. And this new equipment really makes a fine appearance.

Jeff: Terrific!

Jim: But did I have a time convincing the Old Man we should have wood for everybody. He thought it ought to be restricted to the *executive* offices. I explained to him that it makes all the difference in the world to the fellows and girls what they have to work with. . .

Jeff: Uhhuh.

Jim: He brought up the cost angle of course. But I was loaded for him. Showed him how we'd written off depreciation and original investment on our old furniture long ago. It was about time for a little office improvement, don't you think.

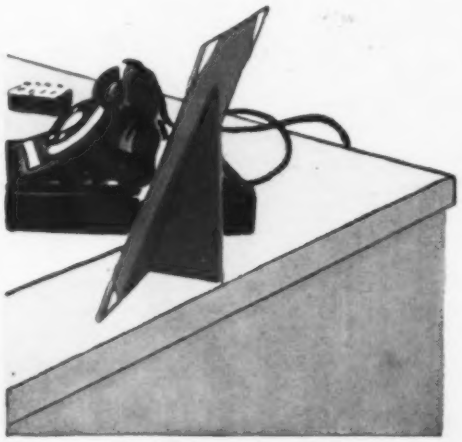
Jeff: You said it.

Jim: The Boss thought wood would be more expensive. But I was ready for him on that, too. Showed him how we could select the exactly right desk and chair for every job and every office. And wood costs no more.

Jeff: What wood?

Jim: Hey, you haven't heard a word I said!

P.S. Jeff's inattention does seem excusable. But employee-wise, cost-conscious office equipment buyers, listen! Wood costs no more . . . makes the best impression . . . tones up the office and the office morale. See your dealer!



Wood OFFICE FURNITURE *Institute*

America's progressive manufacturers of commercial desks and chairs . . . cooperating in product research and product improvement . . . in the interest of greater office comfort, beauty, morale.

Look for this symbol of quality and craftsmanship.

CATALOG OF RUBBER STAMPS AND STAMPING EQUIPMENT

An 88-page catalog issued by the Acme Marking Equipment Co., 8038 Lyndon Ave., Detroit 21, Mich., shows a comprehensive line of rubber stamps and stamping equipment for business and industrial use. Stamps illustrated range in size from a small pencil cap to a complete printing press. Some of the most widely useful types include date and time stampers, numberers, signature stamps, and rotary printing wheels. Copies may be obtained free of charge by writing the company.

OFFICERS ELECTED AT McBEE CO. ANNUAL MEETING

P. M. Zenner, formerly vice-president, was elected chairman of the board and general executive committee at the annual meeting of the McBee Company, Athens, Ohio, recently. D. R. Zenner, formerly vice-president in charge of production, was chosen as president. He replaces A. B. Roe, who is retiring after 15 years as president.

Other officers elected were H. B. McBee and H. A. Baker, vice-presidents. Roger Connor was made a vice-president and re-elected as secretary. H. C. Davis, formerly general sales manager, was elevated to vice-president in charge of sales. B. F. Cutler was elected treasurer and W. E. Ausenheimer was made comptroller. J. M. Scriven and C. J. Dickson were re-elected assistant secretaries.

SUGGESTION FOR PLANT SIGN AND INSTRUCTION BOARDS

Guide maps for the New York City subway and elevated lines, requiring neither frames nor glass covering, and from which defacements by signboard "artists" are easily removed, suggest that sign and instruction boards of similar construction are practical for use in manufacturing plants and large offices.

The signs are made possible through a "laminated sandwich" based on Bakelite

Defacements are easily removed by sponge, soap and water.

phenolic plastic, the signs being printed in water color on paper before laminating. The laminating process eliminates the cost of frames, glass covering and subsequent glass replacements. To remove most marking and defacement, only a sponge, soap and water are required. The signs were made by Hagstrom Co., Inc., 20 Vesey Street, New York, N. Y.

ST. REGIS PAPER HEAD SEES SUSTAINED DEMAND

Continued high demand for products of the St. Regis Paper Company in 1948 is seen in a year-end statement recently made by Roy K. Ferguson, president. He estimates that the new year's sales may exceed by 15% the $140,000,000 total reached in 1947.

During the past year, states Mr. Ferguson, St. Regis substantially increased its timber holdings to insure adequate supply of basic raw material on a long-term basis. The company now owns or has cutting rights on close to 2,000,000 acres of forest lands.

Adding to its already large southern pulpwood holdings, the company during 1947 acquired the right to manage and utilize for a 60-year period 208,000 acres in Georgia's Suwannee Forest. The company also increased its timber holdings in Maine by 82,000 acres. This purchase will help assure a perpetual supply of raw material for the company's important printing and publication paper mill at Bucksport, Me.

Mr. Ferguson reports that several important phases of the expansion program are scheduled for completion in 1948. Early in the year the world's largest center of integrated multiwall paper bag production will be in full operation at Pensacola, Fla.

NO PUNCHING NECESSARY WITH
File-Rite CATALOG RACK

PAT. PENDING

It is easy to keep bound catalogs, price lists and other sales or reference material up-to-date with the File-Rite catalog rack. No punching necessary for bound books. Material inserted or removed in a second. Widely used in many industries. Available in three sizes: 12", 24" and 32" capacities.

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Any printed material up to 11½" high.

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Reduces racking and reference time.

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Makes it easier to keep material up to date.

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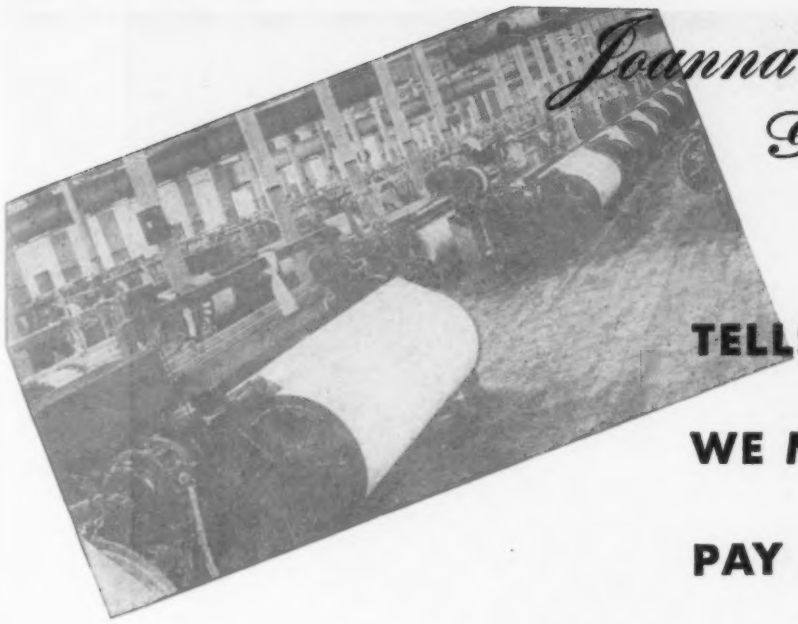
Sections and bound material securely held in rack with flexible steel rods.

When you buy staples....
....Look for the name
Hotchkiss

Hotchkiss chisel-pointed staples are made of exactly the right gauge wire to exact dimensions. They improve office efficiency because they penetrate easier and they improve the operation of any stapler they are made to serve.

Insist on Genuine Hotchkiss staples. They are sold by leading stationers all over the world.

THE E.H. Hotchkiss COMPANY
NORWALK • CONNECTICUT
"Pioneers in all that's best in stapling"



Joanna Cotton Mills Co.
Goldville, S. C.

TELLS "3 WAYS WE MAKE OUR INVENTORY PAY AN EXTRA PROFIT"*

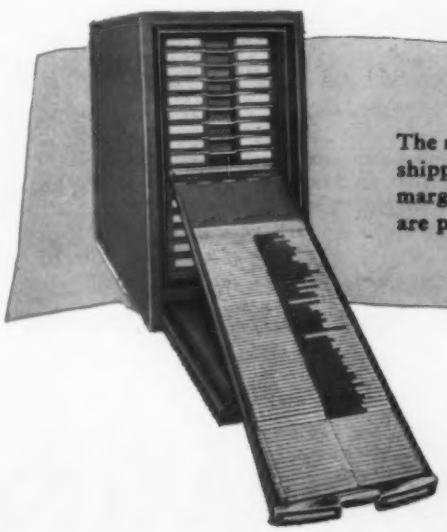
In the textile industry—or any other—it's important to have repair and maintenance parts and supplies on hand *when needed*...to prevent needless loss of man and machine hours and to produce full output daily. This is just one of three different ways the Joanna Cotton Mills Co. of Goldville, S. C., *profits* through the use of Kardex Visible Inventory Control.

Because it's a *visible* system, with Graph-A-Matic signals that flash immediate warning of any threatened shortages, it's an easy, routine matter to keep tab on consumption and make sure that adequate supplies are on hand at all times. The same positive control prevents the piling up of extravagant overstocks and holds the dollar value of inventory way down—that's Profit No. 2. (And a sizable one, when you consider that Joanna is constantly buying and using approximately 5000 separate items to keep their 2682 looms, spinning frames and other equipment operating.)

The third economy results from centralizing all purchasing data in one convenient Kardex record. Like items are grouped together and whenever an order for one is placed, the *visible* feature facilitates review of similar items to be included on the same order wherever it would be advantageous. This reduces purchasing, accounting and receiving costs.

If *you* have been accepting high inventory costs as a necessary evil and would like to turn some of those dollars into profit, ask for further facts about Kardex Visible Inventory Control. We'll be glad to send you the complete Joanna story mentioned in the footnote at the left. Write today!

* Condensed from an article entitled "Idle Looms Weave No Profits" by Walter E. Byars, Purchasing Agent, Joanna Cotton Mills Company. For free copy, write to Systems Division, 315 Fourth Avenue, New York 10, requesting the October 1947 issue of "Systems" Magazine.



KARDEX VISIBLE TELLS AT A GLANCE...

The name and number of the item; stock normal, out, minimum, requisitioned, ordered, shipped and number of months' supply...these key facts are displayed on the visible margin. Complete information on past and current consumption, vendors, prices, etc., are posted on forms contained in the same card pocket.

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THE FIRST NAME IN BUSINESS SYSTEMS

COMBINED ENGINEERING SKILL MAKES BETTER BATTERIES

Another way you profit by the GOULD-PHILCO merger*

The two top-notch battery engineering staffs of Gould and Philco have joined forces—with greater profit to you.

Developers of the famous "Thirty" and the "Kathanode" motive power batteries; the "Plante" and the "Flote" stationary batteries, these engineers have paced battery development for the past twenty years. The combined staffs, you may confidently expect, will continue to lead with advanced battery design.

Gould Batteries are the "Choice of Engineers" today. From Gould will come the "Battery of Tomorrow."

*The Storage Battery Division of Philco Corporation was merged with the Gould Storage Battery Corporation on June 28, 1947. The consolidated organizations are operating under the name of Gould.

GOULD

Gould Storage Battery Corporation
Trenton, New Jersey

"Thirty" and KATHANODE BATTERIES

Among the ASSOCIATIONS

"What's Ahead" Theme of Utility Buyers' Meeting

Two-Day Session Opens March 8th At Roosevelt Hotel, New Orleans

THE program for the Midwinter Conference of the Public Utility Buyers' Group, National Association of Purchasing Agents, to be held at the Roosevelt Hotel, New Orleans, La., on March 8 and 9 has been announced.

R. W. T. Purchas, Middle West Service Co., Chicago, Ill., will preside at the morning session, which will open at 9:00 a.m., Monday, March 8. Following the call to order by Chas. F. Wilson, chairman, Lone Star Gas Co., Dallas, Tex., the visitors will be welcomed by New Orleans Mayor James F. Morrison. Ralph Keefer, General Purchasing Agent, Aluminum Co. of America, Pittsburgh, Pa. will make the first address on the subject, "What's Ahead In Purchasing", followed by discussion. "Purchasing—From Management's Viewpoint" will be the topic of the next talk, by D. A. Hulcy, president, Lone Star Gas Co., also to be followed by discussion. Robert C. Swanton, Director of Purchases, Winchester Repeating Arms Corp., New Haven, Conn. will close the morning session with "What's Ahead In Business".

The afternoon session, J. R. Carmichael, Georgia Power Co., Atlanta, Ga., presiding, will feature the following speakers and subjects: "What's Ahead In Porcelain", Wade Burleson, vice-president, Ohio Brass Co., Barbertown, O.; "What's Ahead In Pipe", F. A. Marsh, assistant to vice-president of sales, National Tube Co., Pittsburgh, Pa.; "What's Ahead In Copper", Joseph W. Mullally, manager utility sales, Anaconda Wire & Cable Co., New York, N. Y.; "What's Ahead In Coal", Marshall Pease, Jr., Detroit Edison Co., Detroit, Mich.; "What's Ahead In Electric Equipment", W. V. O'Brien, manager central stations division, General Electric Co., Schenectady, N. Y.; "What's Ahead In Meters and Valves", Col. W. F. Rockwell, Rockwell Mfg. Co., Pittsburgh, Pa.; "What's Ahead In Steel", Earl L. Shaner, editor-in-chief of "Steel", Cleveland, O.

Harry C. Loehr, vice-president and Purchasing Agent, Central Power & Light Co., Corpus Christi, Tex., will preside at the morning session, Tuesday, March 9, which will open at 9:30 a.m. with an address on "Steel Pricing Practices" by R. C. Todd, vice-president, American Rolling Mill Co., Middletown, O. "The Why of Progressive Payments" by George G. Main, assistant treasurer, Westinghouse Electric Corp., Pittsburgh, Pa., will be followed by discussion. Lewis M. Smith, vice-president and director of public relations, Alabama Power Co., Birmingham, Ala., will speak next on "The Purchasing Department and Public Relations". George A. Renard, executive secretary-treasurer, National Association of Purchasing Agents, will close the session with his "From One P.A. to Another".

The final session, Tuesday afternoon, will be presided over by J. D. Hogg, Cleveland Electric Illumination Co., Cleveland, O. The first talk will be "Buyers' Viewpoint of Pricing Policies", by George Cole, Purchasing Agent, Alabama Power Co., Birmingham, Ala., followed by discussion. Chet Ogden, Purchasing Agent, Detroit Edison Co., will then speak on "Training Program for Buyers", followed by R. L. Leach, general storekeeper, Georgia Power Co., on "Stores Problems". Mr. Leach's talk will be followed by discussion. The final topic of the day will be "Development of Standard Packaging Methods", by Horace L. Brewer, Consumers Power Co., Jackson, Mich., followed by discussion. Closing remarks for the conference will be made by Chas. F. Wilson, chairman.

"FROM ONE P.A. TO ANOTHER" AT CHICAGO ASSOCIATION

The regular meeting of the Purchasing Agents Association of Chicago was held at the Hotel Sherman on January 8, and was designated as Past Presidents' and Past Secretaries' Night. Past presidents and past secretaries of the association, some of whom are now in other lines, attended on a special invitation of the board of governors, and were seated at the speakers' table.

Guest speaker of the evening was George Renard, executive secretary-treasurer of the National Association of Purchasing Agents, with the topic, "From One P. A. To Another". Several members holding a record of 25 years' continuous membership in the association were awarded 25-year silver membership plaques. Members of other associations were invited to attend the meeting. The William Fantozzi Group, a male instrumental quartette, offered music before and during the dinner hour.

SOUTHWEST CONFERENCE SET FOR DALLAS IN OCTOBER

The Second Annual Southwest Purchasing Conference has been scheduled for October 28 and 29 in Dallas, Tex. Conference headquarters will be Adolphus Hotel. William James, Purchasing Agent, Stanolind Oil & Gas Co., Tulsa, has been named as general chairman of the conference. Other committee chairmen will be announced later.

WASHINGTON WOMEN'S GROUP INSTALLS 1948 OFFICERS

New officers for 1948 were installed recently by the Purchasing Agents Association of Washington Women's Group.

Above, left to right, Dorothy F. Brown, Grace B. Jeffrey. Below, left to right, Helene M. Shultz, Lillian M. Dobbs.

Taking office were Dorothy F. Brown, Packaging Sales Co., president; Grace Jeffery, Centennial Flouring Mills Co., vice-president; Helene M. Shultz, Puget Sound Sheet Metal Works, secretary; and Lillian M. Dobbs, Frederick & Nelson, secretary. A regular meeting of the group, first to be held with the new officers presiding, was held on January 8 at the Gowman Hotel, Seattle.

NOPPER ELECTED HEAD OF TULSA ASSOCIATION

New officers of the Purchasing Agents Association of Tulsa, elected at a recent annual meeting, assumed their duties at the regular meeting held on January 13. The officers are; F. P. Nopper, Gulf Oil Corp., president;. C. W. Wallace,

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(*Continued from page* 241)

Mid-Continent Petroleum Corp., 1st vice-president; J. C. Nicholson, Tretolite Co., 2nd vice-president; V. M. Lewis, Dowell, Inc., secretary; G. C. Heidinger, Stanolind Oil & Gas Co., national director; H. M. Cosgrove, executive secretary; E. R. Welch, assistant secretary. The association handles its affairs on a calendar year basis, finding this preferable to having a fiscal year ending early in the second quarter.

The January 13th meeting, which was open to guests, featured a program furnished by Warner and Godfrey, tax specialists of Tulsa. The discussion covered taxation in general, with special reference to changes that have been made in Oklahoma tax laws.

NEW ORLEANS ASSOCIATION SEES FILMS ON OIL

The regular meeting of the Purchasing Agents Association of New Orleans was held at the Jung Hotel on January 12. An animated film, "Prospecting for Petroleum", was shown through the courtesy of the Shell Oil Company. The film dealt with man's never-ending search for oil, explained the geology of oil formation, and traced the development of modern scientific methods of oil exploration. A sequel, entitled "10,000 Feet Deep" was also shown. It demonstrated how geologists chart a region likely to bear oil, including how various tests are made to determine location and depth of mineral.

Robert Elsasser, economist, addressed the meeting on economic predictions for 1948. A. J. Clark, Purchasing Agent, Shell Oil Co., Inc., and Donald L. Musselman, Gulf Purchasing Agent, Luckenbach Gulf Steamship Co., are new members of the association.

PAST PRESIDENTS' NIGHT AT CLEVELAND ASSOCIATION

The annual Past Presidents' Night meeting of the Purchasing Agents Association of Cleveland was held on Thursday, January 15 at the Cleveland Hotel. Feature of the evening was a performance by Capt. C. W. R. Knight, noted British naturalist, photographer and explorer, and his tame eagle "Mr. Ramshaw". In addition to the remarkable feats of the bird, Capt. Knight presented a moving picture called" Rare Records of the Wild".

"THE OUTLOOK FOR 1948" TOPIC AT ALABAMA ASSN.

A luncheon meeting of the Purchasing Agents Association of Alabama was held at the Thomas Jefferson Hotel, Birmingham, Ala. on January 8. The program consisted of commodity discussions and forecasts by members of the association. General business conditions, price trends, inventories, buying policy and other vital factors in the picture for 1948 were among the subjects.

The first annual Seller-Buyer Night program of the association will be held on February 19 at the Thomas Jefferson Hotel. The program will be devoted to recognition of the services of the various selling organizations in the area, and to further cementing the spirit of cooperation that has existed among selling organizations and those who purchase for industry and institutions. George L. Wilson is general chairman of the affair.

Chicago Group Visits Steel Plant

Shown eating dinner in the plant cafeteria recently before a tour of Acme Steel Company's Riverdale plant are, reading clockwise: William A. Macnider, president of the Purchasing Agents Association of Chicago; G. T. Avery vice-president of the company; Larry Seen, association secretary, and Robert A. Doyle, Purchasing Agent, the Glidden Co. Approximately 65 attended.

RENARD GUEST SPEAKER AT NEW ENGLAND ASSOCIATION

The regular meeting of the New England Purchasing Agents Association was held at Schrafft's, Boston, Mass. on January 12. George A. Renard, executive secretary-treasurer of the National Association of Purchasing Agents, was the guest speaker, with the topic, "From One P. A. to Another". Association members were invited to bring another officer of their respective companies to the meeting.

George J. Cronin, past president and past national director of the association, has been selected as its nominee for the position of vice-president of District 9 of the N.A.P.A. for the coming year. The association has announced that attractive membership certificates, suitable for framing and office display, have been mailed to members.

BANK OFFICIAL SPEAKS AT WASHINGTON ASSOCIATION

The regular meeting of the Purchasing Agents Association of Washington was held at the American Legion Hall, Seattle, Wash., on December 11. Guest speaker was E. L. Blaine, Jr., vice-president of the Peoples National Bank and recently president of the National Association of Credit Men. His subject was "Which Road?", a discussion of the clash of ideologies in the world, and the choice this country faces. Mr. Blaine stated there would be no reason to worry as to which road this country will take if we do these things: we must economize, we must re-learn merchandising; we must re-educate ourselves in basic economics; we must appreciate each other more; and we must revive our spiritual side. Tom Williams, partner in the Northwest Laboratories, talked on "The Value of Curiosity", at the educational session of the meeting. He discussed the problem of specifications, testing and sampling, and advised the purchasing agent to develop his curiosity about new materials and methods.

WICHITA ASSOCIATION ELECTS NEW OFFICERS

John Pierce, Purchasing Agent of the city of Wichita, Kans., was recently elected president of the Purchasing Agents Association of Wichita. Neal McCormick, Boeing Airplane Co., was elected 1st vice-president; Leo Wohler, Motor Equipment Co., 2nd vice-president; Kennneth Himebaugh, Watkins, Inc., secretary-treasurer. Dell Roskam, Cessna Aircraft Co., immediate past president, becomes national director, and Harold Fryar, Coleman Co., Inc., alternate national director. Members voted to continue meeting twice monthly.

BANKER GUEST AT DALLAS ASSOCIATION

Guest speaker at the regular monthly meeting of the Purchasing Agents Association of Dallas at the Melrose Hotel on December 18 was Andrew W. DeShong of the Republic National Bank. His subject was "The Industrial Growth of Dallas."

TORONTO ASSN. TO INFORM MEMBERS ON REGULATIONS

In response to many inquiries from members concerning a meeting of the Purchasing Agents Association of Toronto on the subject of new government rules and regulations on quotas and embargoes, J. Russell Speers has issued a special notice on the association's position. In the notice, Mr. Speers points out that at the present time it is impos-

(*Please turn to page* 244)

FAMOUS QUOTES

HISTORICALLY SPEAKING

"I ONLY REGRET THAT I HAVE BUT ONE LIFE TO LOSE . . ." *

GENERALLY SPEAKING

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"the container is part of the product"

This means that General Engineered Shipping Containers frequently come down the production lines with the product, as "part of the product." Result: increased production, substantial savings in space, materials, and man-hours.

Furthermore, General Boxes are designed specifically for the product—whether it is large or small, odd-shaped or uniform, fragile or sturdy. We are specialists in designing compact, lightweight, extra-strong containers for hard-to-pack items.

Write us today. Our engineers will be glad to help you solve your packing problems. New copy of "The General Box" is just off the press. It is yours free upon request.

* *Nathan Hale (1756-1776)—Every school boy remembers him as the hero of the American Revolution who said: "I only regret that I have but one life to lose for my country."*

General Nailed Box | General Cleated Corrugated Container | General Corrugated Box

GENERAL BOX COMPANY ... engineered shipping containers

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DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez. Continental Box Company, Inc.: Houston, Dallas.

General Wirebound Crate | General All-Bound Box | Generalift Pallet

Amazing
PANEL SOAK TEST PROVES
The Superiority of
ELEKTRO-PURJ-IT *all Purpose* **CLEANING COMPOUND**
FOR HARD-TO-CLEAN *SURFACES*

1. Grease, oil and soot were first smeared over the surfaces of two enameled metal panels . . . dirt at its worse.
2. Both panels were then soaked for a short period in different solutions of equal concentration—as shown above—Elektro-Purj-It solution in the glass to the right. Here you see the vigorous cleaning action taking place.
3. Following removal, both panels were subjected to light finger-tip scrubbing. The Elektro-Purj-It soaked panel successfully passed this rough test, as shown above, with a clean surface. The solution of ordinary cleaner didn't even get a passing grade.

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For Your
WASHROOMS
WALLS *and* WOODWORK
FACTORY FLOORS *and* GRIMY MACHINERY

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FREE SAMPLE NOW!
TROJAN PRODUCTS DEPARTMENT
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(*Continued from page 242*)

sible to obtain any more definite information from the government other than that appearing in the official Gazette. He states that when something definite can be arranged with the authorities in Ottawa to have a speaker come to Toronto, the association will arrange for a special meeting so that members can receive the latest information on the regulations and, if possible, join in a question period.

CINCINNATI ASSN. MEMBERS "QUIZ THE EXPERTS"

Under the sponsorship of its educational committee, the Cincinnati Association of Purchasing Agents held a "Quiz The Experts" meeting on January 13 at the Hotel Gibson. Questions were submitted in advance by members to Edward H. Cordes, The E. Kahn's Sons Co., chairman, and Wilbur N. Muchmore, The Frank F. Taylor Co., moderator.

The four commodities that came in for discussion, with the audience participating, were steel, coal, chemicals, petroleum and petroleum products. Leaders of the discussion were, Albert H. Bader, Jos. T. Ryerson & Son, Inc., steel; Michael J. Moriarty, U. S. Playing Card Co., coal; Andrew Lincoln, The Wm. S. Merrill Co., chemicals; and Milton R. Maddux, The Philip Carey Mfg. Co., petroleum and petroleum products. The meeting is the only one of the year in which only members take an active part. During and after dinner, a vocal group entertained with a number of old time songs.

TULSA ASSN. JOINS IN CAR AND TRUCK SURVEY

The Purchasing Agents Association of Tulsa, in conjunction with the Petroleum Motor Transport Assn. of Oklahoma and the Oil Activities Department of the Tulsa Chamber of Commerce, recently completed a survey which determined that 16,509 fleet cars and trucks are now in operation and purchased in Tulsa. The survey was made to emphasize the advantages to manufacturers of establishing permanent fleet car offices in Tulsa. The survey showed conclusively that a large market with impressive purchasing powpower is concentrated in Tulsa.

CURRENT WASHINGTON TRENDS REVIEWED AT MILWAUKEE

The January 13th meeting of the Milwaukee Association of Purchasing Agents, held at the Milwaukee Elks Club, was designated Ladies' Night, and members' wives and sweethearts were guests of the association. Harold K. Howe, Washington representative of the LaSalle Steel Company, and editor of the "LaSalle Washington Letter" sent every few weeks to industrial steel users, was the guest speaker. His subject was "Current Happenings and Trends In Washington".

KEY SPEAKERS ON CURRENT SUBJECTS FEATURED AT CHATTANOOGA MEETING

A large turnout of members and top company officials attended the regular meeting of the Purchasing Agents Association of Chattanooga, December 9, at the Hotel Patten, which featured addresses on current subjects by experts in the fields.

The theme of the meeting was "Outlook on Business for 1948". The speakers and their subjects, on which each spoke for 10 to 12 minutes, were: E. H. Gumbert, district sales manager for Bethlehem Steel Co., Cincinnati, who spoke on the "Steel Industry"; George M. Clark, president of the Pioneer Bank, Chattanooga, the "Bankers' Outlook"; Claude Dudley, state representative for Tennessee of the International Moulders' Union, "Labor"; and Dr. R. J. Barr, professor of economics at the University of Chattanooga, "Economics".

CHICAGO WOMEN'S DIVISION HEARS PSYCHOLOGY TALK

The regular monthly meeting of the Women's Division, Purchasing Agents Association of Chicago, was held on January 8, at the Civic Opera Building. Guest speaker was Dr. Cleo Dawson, whose subject was "Psychology In Business".

CHICAGO TO RESUME PRODUCTS EXPOSITION FEB. 17-19

The Purchasing Agents Association of Chicago will resume its annual products exposition on February 17, 18 and 19, from 10 a.m. to 10 p.m. at the Hotel Sherman. Discontinued during the war years, the fourteenth annual exposition is expected to be the finest and most successful ever held. Every booth out of a total of 170 had been sold two months before the opening of the show. The show will include the newest and latest of present day postwar products.

"THE 1948 OUTLOOK" SUBJECT AT JACKSON MEETING

The regular meeting of the recently established Purchasing Agents Association of Jackson, Miss. was held at the Heidelberg Hotel on January 13. Dr. T. S. Berry, economist of Millsaps College, spoke on "The 1948 Economic Outlook". The program was arranged by H. D. Carmichael.

SNYDER GUEST SPEAKER TOLEDO ASSOCIATION

The regular meeting of the Purchasing Agents Association of Toledo was held at the Toledo Yacht Club on January 22. Frederic Snyder, international traveller and lecturer who addressed the group last year, made a return appearance, speaking on current events and trends.

(*Please turn to page 246*)

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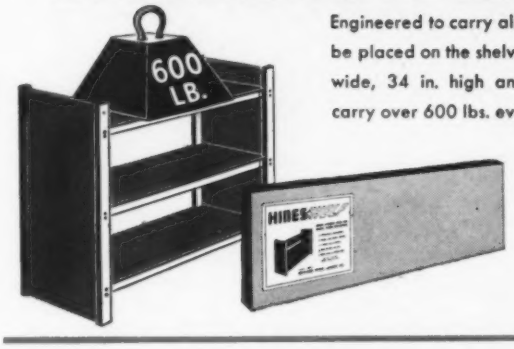

Engineered to carry almost any load which can be placed on the shelves. One basic unit—3 ft. wide, 34 in. high and 11½ in. deep—will carry over 600 lbs. evenly distributed over the three shelves—9 sq. ft. of shelf area! Item comes knocked down and completely carton packed for easy handling.

Here's the answer to all your shelving problems. Hines-Shelves can be assembled by unskilled labor with immense savings in time, labor and money. Ponderosa Pine frame is assembled with a patented hardware bracket and the shelf surface is made of durable Masonite Tempered Presdwood.

Special Engineering!

Where quantities needed are large enough to warrant special production, Hines-Shelves can be made in special sizes.

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Great Lakes Distributing Co.
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Lumbermen's Door & Trim Co.
16161 Euclid Ave., Cleveland, Ohio

Michigan Wholesalers, Inc.
164 W. Michigan Ave., Jackson, Mich.

Northwestern Furniture Co.
500 N. Water St., Milwaukee, Wis.

O & N Lumber Company
Menomonie, Wis., Stanley, Wis.

Smith-Orr Company
14351 W. Warren Ave., Dearborn, Mich.

The Kuntz Johnson Company
66 Mead St., Dayton 1, Ohio

Tip Top Distributing Co.
300 S. W. 9th St., Des Moines 9, Iowa
Storm Lake, Iowa, Ottumwa, Iowa
Cedar Rapids, Iowa, Waterloo, Iowa

FAR WEST

Allied Western Distributors, Inc.
149 New Montgomery St., San Francisco 5, Calif.

Boulevard Lumber Co.
8332 N. Vancouver Ave., Portland 11, Oregon

George E. Ream Company
235 S. Alameda St., Los Angeles 12, Calif.

Morrison-Merrill & Co.
3rd West & 1st North, Salt Lake City 11, Utah

The Don Roberts Company
12th St. N. & River Drive, Great Falls, Mont.

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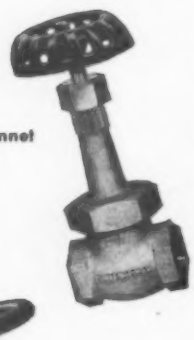

Fig. 2228
Bronze Union Bonnet
Gate Valve

Fig. 1430
Iron Body,
Gate

• You can't fool the maintenance men on valve quality. They know that when a valve has a much longer than average service life, that valve has superior accuracy and precision built into it from handwheel to pipe threads.

Such valves are the only kind that Lunkenheimer has ever produced. For over three quarters of a century, the Lunkenheimer quality ideal has won ever widening acceptance until today it is a recognized tradition in American industry.

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(*Continued from page* 244)

Secretary Walter Noe has been promoted to the post of division Purchasing Agent of the Libbey Glass Division of Owens-Illinois, and his secretarial duties have been turned over to Sam Schillaci.

ANNUAL EXECUTIVE NIGHT AT ST. LOUIS ASSOCIATION

The Annual Executive Night meeting of the Purchasing Agents Association of St. Louis, was held on Tuesday, January 27. David F. Austin, vice-president of the United States Steel Corp. of Delaware, was the guest speaker, discussing present conditions in the steel industry. Leading St. Louis executives, guests of the association for the evening, offered comments on the subject "What's Ahead In Business In 1948".

ANDERSON SPEAKS AT ERIE

Leverett A. Anderson, Purchasing Agent, for the Twin Coach Co., Kent, Ohio, and vice-president for District 6, National Association of Purchasing ing Agents Association was the guest speaker at the monthly meeting of the Purchasing Agents Association of Erie, held on January 21 at the Elks Club. His subject was "Do You?".

McGILL GUEST SPEAKER AT NEW YORK ASSOCIATION

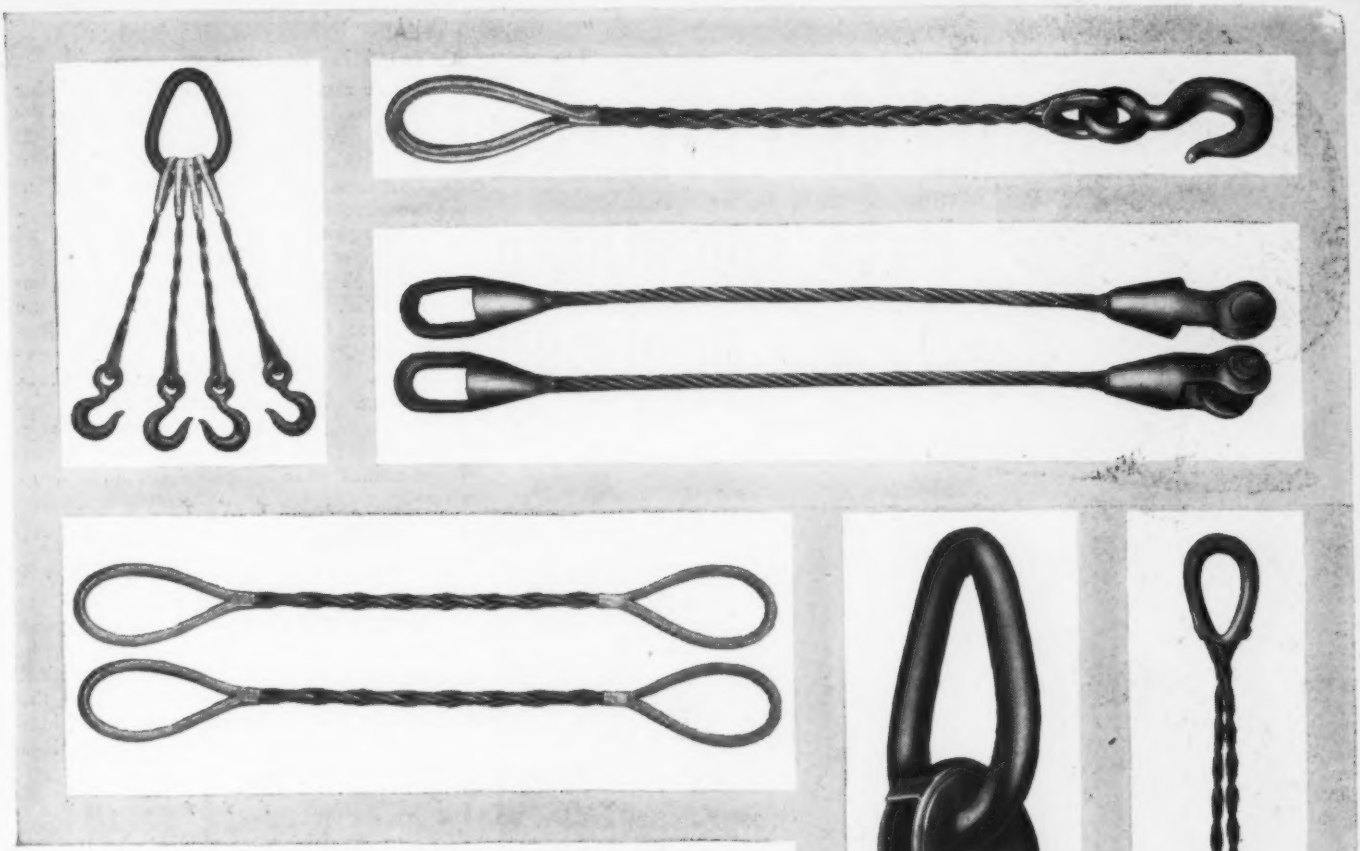
Herbert N. McGill, president, McGill Commodity Service, Inc., was the guest speaker at the regular meeting of the Purchasing Agents Association of New York, held January 20, at the Builders' Exchange Club. Mr. McGill's subject was "1948—A Critical Economic Year". The afternoon forum featured the topic "Statistical Controls in Purchasing", with discussion led by E. E. Rumple, Merck & Co., Inc.

The association will again be host to sales and other executives at the annual Purchasing-Sales dinner at the Hotel Commodore on February 25. Special guests at the affair will be President Garnet Dickson and Secretary George A. Renard of the National Association of Purchasing Agents.

The third annual course of the purchasing institute of the association which began February 2 has as its subject, "How To Buy Printing". The course, which is being held at the Midston House, will have eight sessions, and will be held on Monday evenings. Enrollment for the course is confined to membership.

STEEL EXECUTIVE SPEAKER

The regular meeting of the Purchasing Agents Association of Springfield (Ohio) was held on Wednesday, January 14, at the Shawnee Hotel. R. C. Todd, sales consultant and vice-president of The American Rolling Mill Co., Middletown, O., was the guest speaker, discussing steel trends and the hazards that are faced. Plans for a salesmen's night meeting will be announced shortly.



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"INFORMATION PLEASE" PITTSBURGH ASSOCIATION

The regular meeting of the Purchasing Agents Association of Pittsburgh at the Hotel William Penn on January 20 featured a return engagement of the "Information Please" type of program introduced last year.

The panel of experts that discussed all phases of purchasing problems consisted of I. E. Walton (moderator), Heppenstall Co.; H. R. Michel, Westinghouse Electric Corp.; M. E. Carlisle, Pittsburgh Plate Glass Co.; R. W. Mackensen, Pittsburgh Coal Co.; and C. S. Bygate, Rockwell Manufacturing Co. Following discussion of questions submitted to the panel in advance, several questions were submitted from the floor.

ZELOMEK TALKS ON CONGRESS ACTION AT ROCHESTER ASSN.

The regular meeting of the Purchasing Agents Association of Rochester was held on January 28. A. W. Zelomek, president of the International Statistical Bureau, Inc., spoke to the group on the subject, "What effect will the decisions of the current congressional sessions have upon material shortages."

OREGON MEETING

Professor P. S. McAllister of the Lewis & Clark college school of business administration was the guest speaker at a luncheon meeting of the Oregon Purchasing Agents Association, held January 6, at the Heathman Hotel, Portland.

PANEL DISCUSSION ON 1948 OUTLOOK AT LOUISVILLE

The January 20th meeting of the Purchasing Agents Association of Louisville, held at the Kentucky Hotel, featured a panel discussion on "The Outlook for 1948."

Participating in the discussion were John L. Wrege, president, Louisville Tin & Stove Co.; J. A. Means, president, Peaslee-Gaulbert Corp.; John W. Barringer, president, Chicago, Indianapolis & Louisville Railroad Co.; Merle Robertson, president, Liberty National Bank & Trust Co.; Dr. Charles W. Williams, University of Louisville, and W. M. McCord, assistant personnel director, the Mengel Co.

BOMBS TO PLOWSHARES SEATTLE MEETING

Dr. Donald E. Loughridge, professor of physics, University of Washington, Seattle, Wash., spoke on "From Bombs to Plowshares" at the January 8th meeting of the Purchasing Agents Association of Washington, which was held in the American Legion building. Dr Loughridge was one of the scientists who worked on the Manhattan Project. He discussed the relative importance of atomic energy for developing more powerful bombs and for peace time uses. Another speaker was George Neil of the Sand Point Naval Air Station.

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Rubber Demand Continues at High Levels

By Herbert E. Smith

PRESIDENT, UNITED STATES RUBBER COMPANY

The demand for products of the rubber industry will continue at a high level in 1948, according to present indications.

Total production of the industry for the coming year is expected to reach $2.5 billion or more than two and one-half times the volume of 1940, the prewar record year.

This will compare with an all-time high of approximately $2.7 billion in 1947.

A total of 905,000 long tons of natural and synthetic rubber is expected to be used in 1948, against the all-time high consumption of 1,110,000 long tons forecast for 1947.

Although production of most rubber products in 1948 will equal or exceed that of 1947, tire production will probably recede from the all-time high of just under 100 million casings in 1947 to a total of 83,000,000 casings in 1948.

Output of rubber footwear will be further increased in 1948 although production in 1947 was substantially greater than prewar.

The re-introduction of style and color has been a strong influence in footwear and this is expected to continue.

The active demand for rubber clothing and coated fabrics will continue.

Foam rubber, firmly established as cushioning in all tranportation fields, will be increasingly available through 1948 for domestic furniture and mattresses. New plant capacity and the increased supplies of natural rubber will help this rapidly growing industry.

With the return to natural rubber achieved, output of Lastex yarn in 1948 is expected to surpass prewar levels. Facilities have been increased to meet broad expansion in the use of this yarn.

Industrial rubber products will be made in large volume. Most items will be in ample supply but conveyor belts will be short for several months.

Production of golf balls, bathing caps and druggist sundries has been facilitated by the return of natural rubber and merchandise will be in ample supply although the demand will continue at a high level.

During 1947 consumption of natural rubber exceeded synthetic for the first time since 1943. The return to natural rubber will be further advanced in 1948 as 550,000 long tons of natural is expected to be used with 355,000 long tons of synthetic, according to present estimates. About 61 per cent of all rubber used in 1948 will be natural. In 1942, 96 per cent of all rubber was natural while in 1945 the use of natural rubber reached a low of only 13 per cent.

NATURAL RUBBER SUPPLY CONTINUES BELOW NORMAL

The nation's rubber manufacturing industry shattered all production estimates in 1947 when its mills chewed up a record 1,110,000 long tons of new rubber and poured out a three billion dollar flood of finished products.

The production picture was sketched in a year-end review of the industry's operations by The Rubber Manufacturers Association, New York. This was the record, as measured against the previous peak-year of 1946:

PRODUCTION

	1947	*1946*
	(in units)	
Pass. Car Tires	77,000,000	66,466,000
Truck, Bus Tires	17,500,000	15,832,000
Truck, Bus and Passenger Tubes	80,000,000	77,251,000

CONSUMPTION

	1947	*1946*
	(in long tons)	
Natural Rubber	556,000	277,597
Synthetic Rubber	554,000	761,699
Total New Rubber	1,110,000	1,039,296
Reclaimed Rubber	285,000	275,410

The association singled out as one of the most significant developments of the year the fact that voluntary consumption of American-made rubber had exceeded by a considerable margin the expectations of both government and industry officials.

The industry is now required to use American-made rubber to meet about one-third of its total requirements for new rubber. This is a national security stipulation laid down by the government last March 31 as insurance against repetition of the near disaster in 1942 which saw the U.S. cut off from virtually all sources of natural rubber.

With natural rubber supply still far below normal, only the availability of American rubber made it possible for the industry to achieve its production ticket on tires, tubes, hose and mechanical goods, hard rubber, footwear and thousands of other rubber products.

Demand continues extremely high for all types of rubber products. Chief among items in which demand exceeds supply is conveyor belting, under heavy priority pressure both in the domestic picture and in Europe where it is urgently sought for rehabilitation of mines and other war-damaged industries.

* * *

STANDARD FOR TESTING AND RATING CONVECTORS

Commercial Standard CS140-47, Testing and Rating Convectors, has been issued by the National Bureau of Standards and is for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., price 10 cents.

(*Please turn to page* 254)

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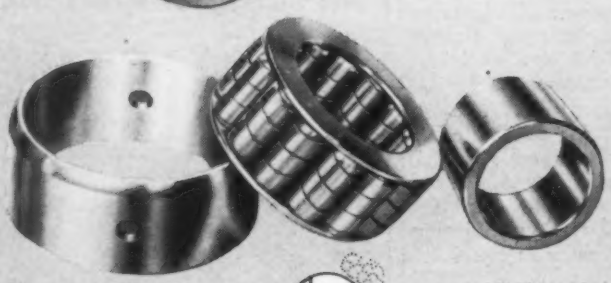

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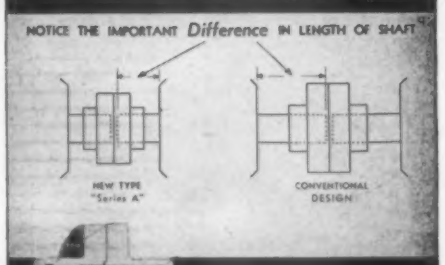

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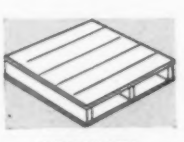
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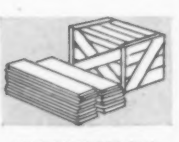
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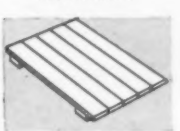
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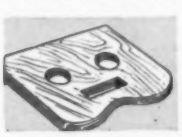
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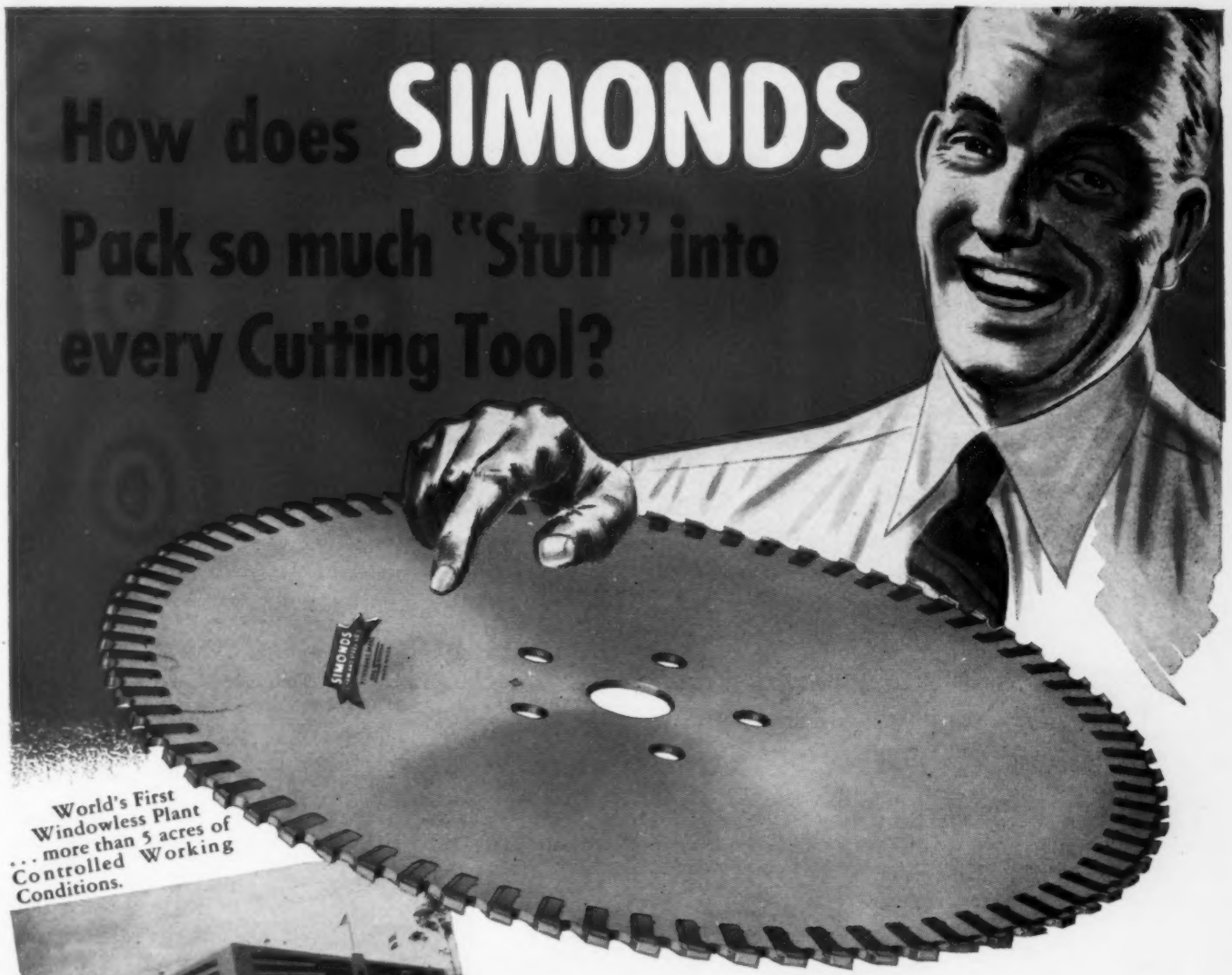

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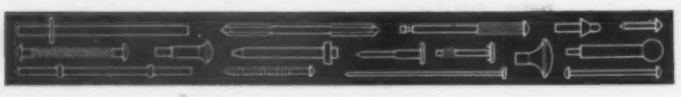

(*Continued from page* 254)

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Pkg. 3. Case Stories in Packaging Conservation and Substitution (Consercation of Packing Materials; Conservation and Salvage in the Drug Industry; From Peacetime Waste to Wartime Economy; How Bakers Are Meeting Packaging Problems; Foil Substitutes; Use of Substitute Materials in the Retail Store) .....$.75

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List prices are subject to the following discounts: Member companies, 1 to 100, 25%; Individual Members, Libraries and Schools, 1 to 100, 15%; Non-members, 15% on quantities over 100. Larger discounts are given to member companies and individual members, libraries and schools, for orders in excess of 100 copies.

Orders under $3.00 should be accompanied by remittance; postage stamps not accepted.

BALL BEARING CATALOG

The Federal Bearings Co., Inc., Poughkeepsie, N. Y., is now making available its 260-page ball bearing catalog "K", containing 100 pages of engineering information and data. The first section describes and illustrates all of the many types of anti-friction bearings produced by Federal and contains interchangeability and conversion tables. The engineering data section contains detailed information on calculation of loads, various bearing load conditions, a load modifying chart, lubrication and care of bearings, and other practical information. The final section catalogs the aircraft bearings produced by the company.

(*Please turn to page* 258)

SAME PRECISION QUALITY FROM *FOUR* CONVENIENT SOURCES!

Close to you in the New England, Middle Atlantic or Mid-Western states, Wyckoff's *four* complete plants provide prompt, nearby service on precision cold finished steel. Wyckoff steels have set an enviable quality standard in finish, accuracy and uniformity . . . obtainable from all four Wyckoff plants. When you need cold finished steel bars (carbon or alloy), shapes, wide flats or shafting . . . look to the WYCKOFF plant near you for prompt, intelligent service. *You'll find service that saves . . . quality that pays!* Our service will be patterned to meet your requirements.

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RAWHIDE gives you *more* in soft hammers and mallets. And *Chicago* Rawhide gives you exceptional power and maximum protection. C/R hammers and mallets absorb shock, deliver powerful blows, protect finished surfaces and stand up under tough use. For hammers and mallets that never split, crumble or mushroom, always ask for *Chicago* Rawhide.

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PROTECTION
POWER
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C/R Hammers have malleable iron heads with replaceable coiled rawhide faces.

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Other C/R maintenance products are: round, flat, twist belting; belt pins and lacings; gears, pinions, gear blanks; aprons, hand leathers; hydraulic packings.

WESTINGHOUSE SOUND AND SLIDE FILMS LISTED

A 24-page booklet (B-3988) giving complete description of Westinghouse sound motion pictures and slide films for industrial and civic use is available from the Film Section, Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Four colored and twelve black and white sound movies, plus eight black and white slide films are loaned free except for cost of transportation. Subjects covered include: electronics, electricity, radio, RF heating, research, industrial maintenance, safety, vitamins, and nutrition. Also offered are four slide-film instruction courses, broken down into separate lessons, that deal with resistance welding control, electrical measuring instruments, electronics and RF heating.

BOOK ON TOOLMAKING PRACTICES

The 448-page book on toolmaking practices—"Precision Hole Location for Interchangeability in Toolmaking and Production," published early in 1947 by the Moore Special Tool Co., Bridgeport, Conn., has gone into its second printing of 5,000 copies. In addition to wide use in toolrooms and machine shops, the book has become a standard text in mechanical engineering courses at a number of colleges as well as numerous apprenticeship training courses, according to Ed Shaw, sales manager.

"Precision Hole Location" contains over 400 illustrations and is a comprehensive review of all hole-location practices and their evolution to the point where the toolmaker can employ engineered methods and apply the principle of interchangeability to his own operations. It also contains a section of 184 pages of Woodworth Hole Location Tables for converting holes on circles to rectangular coordinates.

The book is sold by the company for $3. within the metal-working industry; $3.50 abroad.

BOOKLET ON MARKING GOODS FOR EXPORT

The Department of Commerce announces the issuance of a booklet containing detailed descriptions on how to mark and label goods or their containers for export to foreign countries. Entitled "Foreign Marks-of-Origin Regulations", the booklet enables exporters to know in advance the customs regulations prescribed by various foreign countries as a condition of entry and sale to avoid goods being subject to possible customs fines or delays in or even refusal of admission. The booklet may be purchased from the Superintendent of Documents, Washington 25, D. C., for 35 cents. It is a revision of the handbook first published in April 1939 and now brought up to date to include most recent regulations.

(*Please turn to page* 260)

THE NEW THOR CHIPPERS ARE

BIG NEWS

IN AIR TOOLING

NEW streamlined design centers weight at the valve block . . . provides handling balance . . . puts weight *behind* the piston to absorb vibration and "kick-back."

No. 33
3" Stroke
Weight . . . 14½ lbs.
Length . . . 15⅜"

NEW plate valve block features large air ports that can deliver even at reduced air pressure full, constant power for faster . . . harder blows.

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NEW drop forged steel handle is shaped for comfortable hand grip, with ample clearance for large hands and gloves . . . eliminates cramping and operator fatigue.

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1" Stroke
Weight . . . 12 lbs.
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by BASSICK-SACK

FINISHING BY LEA METHODS LEA COMPOUNDS

Here's what the Bassick-Sack Division of the Bassick Co. has to say about LEA:

"We are using the LEA Method and LEA Materials almost exclusively in the finishing of our furniture hardware, and are finding them most satisfactory. We have every expectation of continuing to use them for cut-down and coloring operation on plated parts, solid cast-brass and stamped. We intend shortly to use them on die cast parts finished in either chrome plate or brass plate."

That's versatility: LEA Methods and LEA Compounds doing several jobs (including cut-down and coloring) on a variety of articles (plated, stamped, sand-cast and eventually, die-cast). This wide range of applications may give you some conception of how LEA will fit into your production line. If you are burring, polishing or buffing metals, plastics or woods, LEA, with more than twenty years' experience in the finishing field, may be able to assist you in cutting costs and improving the quality of your finishing.

THE LEA MANUFACTURING CO.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions

16 CHERRY AVENUE WATERBURY 86, CONNECTICUT

COUNTY DATA BOOK ISSUED BY BUREAU OF CENSUS

The Bureau of the Census has announced that the County Book, supplement to the annual Statistical Abstract Of The United States, is now available for public distribution. Copies of the County Data Book, bound in buckram, may be obtained from the Publications Section, U. S. Dept. of Commerce, 350 Fifth Ave., New York, for $2.75 per copy.

The County Data Book is a compact, 440-page presentation of significant social and economic data for every county in the United States. The basic framework includes sections on Population, Labor Force, Housing, Agriculture, Industry, and Retail Trade, and Other Economic Data. Although most of the 91 items included are from reports of the 1940 decennial census, a number of more recent items are also included. A map for each State shows the geographic relationship of counties, metropolitan areas, and principal cities.

NEW PLASTICS HANDBOOK ANNOUNCED BY PLASTICS INDUSTRY

Announcement is made by the Society of the Plastics Industry, 295 Madison Avenue, New York, N. Y., of the publication of the new SPI Handbook. The society states that the book represents a pooling of information by more than 600 firms, the work of 300 engineers, and an over-all effort of 6 years.

The volume runs 451 pages, indexed, and its chapter headings are as follows:

Classification of Plastics Molding Materials;

Molding and Forming Plastics Parts;

Design of Molded Articles;

Design Standard for Inserts—their Application in Plastics Parts;

Standards for Tolerances on Molded Plastics Parts;

Cementing and Assembly of Plastics;

Testing Plastics Parts;

Mold Design and Recommended Steels;

Machining and Finishing Plastics Parts;

Laminated Products and their Fabrication (Through Courtesy of the National Electrical Manufacturers Association.)

Six chapters of the Handbook were released as preliminary chapters in booklet form in the last three years, but these have been revised for the final publication.

"Although this is primarily a handbook for molders and fabricators of plastics parts," states Albert G. H. Dietz, Massachusetts Institute of Technology, "the first section dealing with a systematic classification of the plastics is of more general interest and is important to the ultimate user as well as to the fabricator and molder.

"In this classification the Society has assigned classification numbers to plastics based upon heat distortion points, impact strengths, and tensile strengths, with additional provision for the specification of various mechanical, electrical,

(*Please turn to page* 262)

No Matter what Class or Type of Steel Tubing you need--

CARBON	STAINLESS WELDED (Gloweld)	HIGH DUCTILITY	HIGH TEMPERATURE SERVICE	CORROSION RESISTANT	AIRCRAFT
HIGH MAGNETIC PERMEABILITY	ALLOY	HIGH PURITY IRON (Globeiron)	STRUCTURAL	PRESSURE	SPECIAL ANALYSES
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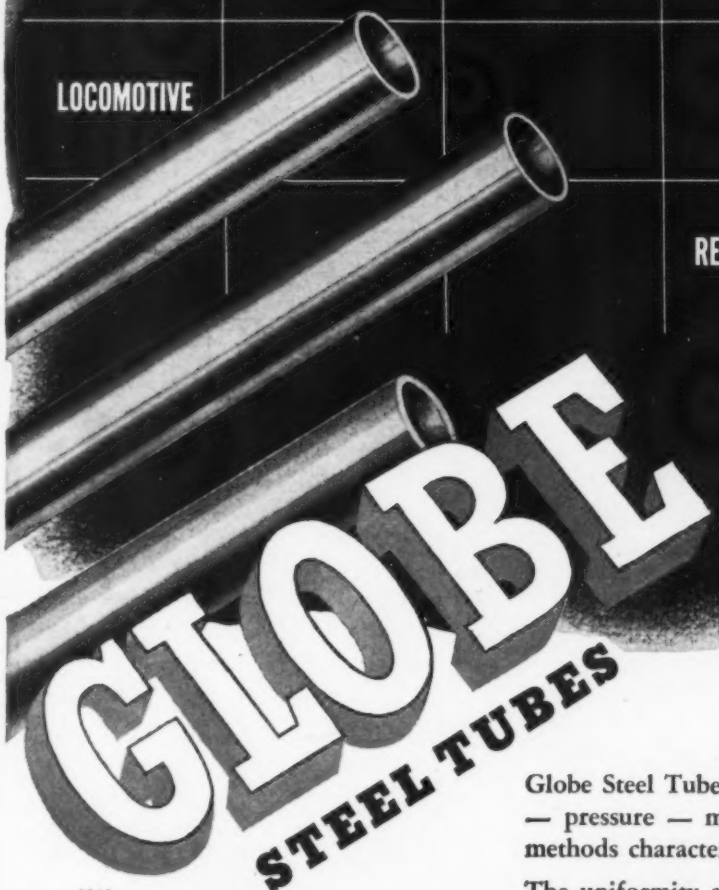

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PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE
In Business for Your Safety

(*Continued from page* 260)

optical, chemical and other properties which might be important for special applications. This in itself is valuable to specification writers and to others concerned with the selection of plastics for various uses."

The SPI Handbook is being distributed free to all members of the Society, and is available at office of Society of the Plastics Industry, 295 Madison Avenue, New York, N. Y. at $7.50 a copy to non-members of the society. Members may obtain additional copies at $4.50.

SEALING OF CORRUGATED AND SOLID FIBRE CONTAINERS

The third edition of "Sealing", constituting complete revision of booklet on "Sealing of Corrugated and Solid Fibre Containers", is available without cost from the Robert Gair Company, 155 East 44th Street, New York 17, N. Y. Based on the theme that the shipment of an improperly sealed fibre container is unfair to the shipper, the consignee, the box maker and the carrier, the purpose of this 36-page booklet is to point the way to the development of shippers that will adequately safeguard contents to consignee. Its four sections deal with the following subjects:

1. Adhesives, Hand Sealing and Automotic Sealing;
2. Gummed Paper Tape;
3. Metal Stitches and Staples;
4. Metal Straps or Wire.

"PALLET BUYERS AND ENGINEERS GUIDE"

"Pallet Buyers and Engineers Guide" is the title of 24-page manual available from the Pallet Sales Corp., 122 East 42nd St., New York, N. Y. The guide is designed to assist in planning or extending pallet operations. Selection of the proper size and type of pallet for most effective operation is stressed both in text and sketches. The book contains information on specifications and construction of hardwood pallets, as well as information on savings in time, space and money made possible by the use of pallets.

NEW EDITION OF BLUE BOOK OF STAMPING MANUFACTURERS

The fourth edition of the Blue Book of Stamping Manufacturers, issued by the Pressed Metal Institute, is now available, on request, to designers and users of stampings. The book contains a listing of members, geographically, information regarding their facilities, pertinent facts about the Pressed Metal Institute and present officers, trustees and executive committee. Requests should be addressed to the Pressed Metal Institute. 820 Union Commerce Building, Cleveland 14, O.

(*Please turn to page* 264)

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BRASS and ALUMINUM
MILLED FROM THE BAR (NOT PUNCHED)
SIZES 2 TO 12 AND ¼"
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World's largest manufacturers of small wooden cheese boxes.

"When you want this valve to work . . . it works"

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LEVER-SEALD

HOMESTEAD LEVER-SEALD VALVES operate *instantly* with only a *Quarter-Turn* . . . at all times and under all conditions . . . in services where extremes of temperature, pressure, or the corrosive action of line fluids would cause ordinary valves to stick or "seize."

That's why they have been favorites with industry for more than 15 years in all sorts of difficult applications.

They're *stick-proof*, because built right into each valve is a powerful lever and screw device that *relieves seating pressure* between plug and body just enough to overcome friction and permit *easy turning*.

This *stick-proof* construction is only one of many HOMESTEAD LEVER-SEALD VALVE features assuring long, economical, trouble-free service.

You may order HOMESTEAD LEVER-SEALD VALVES in metals and alloys to meet service requirements, in sizes from 1½" to 12" with regular or wedge gate valve face to face dimensions, for pressures from vacuum to 1500 pounds. Complete technical details and Valve Reference Book No. 38 are yours for the asking.

CHECK THESE OUTSTANDING LEVER-SEALD VALVE FEATURES

1. Instant stick-proof operation.
2. Quarter-turn fully opens or closes.
3. Positive mechanical seal.
4. Seating surfaces always protected in both open and closed positions. Corrosion practically eliminated.
5. Unobstructed straight-line fluid flow.
6. All operating parts protected from damaging effects of service conditions and weather.

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No. 2—2⅝" normal height
No. 3—3⅛" normal height

Machine Tool Manufacturers strongly emphasize the need, not only to set machines level, but to keep 'em that way. Periodic re-leveling is essential for accurate work tolerances. How often, depends on the type of foundation. No method of machine setting is stable enough to maintain the accuracy of initial leveling. It is important to check after first month of operation, then check periodically and re-level whenever necessary. When a machine is set on EMPCO JACKS, the whole operation is the work of but a moment: Simply apply a wrench to the "hex" screw head, turn right or left until your level indicator reads "zero."

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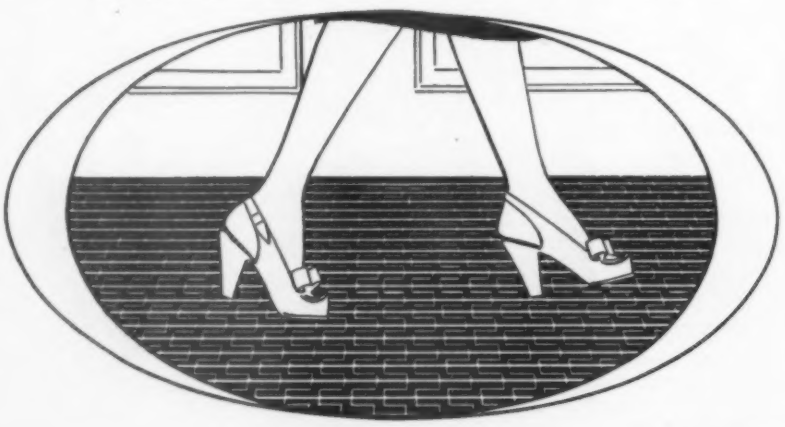
No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Guarantees efficient distribution of concentrated loads . . . maximum free opening for light and air. Write for Bulletin 1140.



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NATIONAL DEPARTMENT
1103 PITT BANK BLDG., PITTSBURGH 22, PA.
(Distributor for THE TRI-LOK COMPANY)

DRAVO

POCKET SIZE OHM'S LAW CALCULATOR POPULAR

Since 1940, the Ohmite Ohm's Law Calculator, sold by Ohmite Manufacturing Co., 4835 Flournoy St., Chicago 44, Ill., has solved the Ohm's Law problems of over one-half million persons. A year ago, a new, small (3″ x 9″) pocket size calculator was introduced and has proved very popular. Like the previous Ohmite calculator, it provides a simple and handy means of solving resistance calculations. The answer to an Ohm's Law problem can be read with only one setting of the slide.

A handy, new arrangement places all the computing scales on one side of the calculator. The resistance scale covers a range from .01 ohm to 100 megohms. Currents in the commercial range are given in amperes, and in the radio-electronic range in milliamperes.

It is not necessary to know Ohm's Law or to put your resistance calculation in the form of an equation in order to use the calculator, yet it is equally useful to the trained engineer and to the student. All you need to know are any two values for the circuit in question such as the ohms and watts, ohms and current, ohms and volts, volts and amperes, volts and watts, or amperes and watts. Brief instructions are printed on the calculator. The slide is set by means of the known values and both of the remaining factors are then read from scales from the one setting.

To make the calculator even more of a valuable, practical tool, as well as an educational one, a stock unit selector listing hundreds of units has been included. Another valuable addition to the calculator is the inclusion of the Composition Register RMA color Code in the form of a table on the side of the calculator having the stock unit selector.

The Ohmite Ohm's Law Calculator can be obtained from jobbers, or directly from the Ohmite Manufacturing Company for 25c (in coin) to cover the cost of handling.

INDUSTRIAL HYGIENE SERVICES AVAILABLE TO INDUSTRY

Operations involving the use of volatile solvents, unless properly controlled, may expose workers to health hazards. Governmental industrial hygiene agencies in almost every State, can assist plant managers in making the solvent department and other potentially hazardous departments safe places to work. The service, available at no cost from these agencies, is likely to be particularly helpful to small plants which have no safety or industrial hygiene departments of their own. Consultation on the department layout, equipment and operation is available from these agencies. Also, workmen sometimes develop symptoms of occupational illness when there is no obvious source of trouble in the working environment. In such instances, engineers and physicians from the industrial

(*Please turn to page* 266)

AN ever-growing variety of electrical appliances are finding valued use for Allegheny Metal, pioneer stainless steel in America. Its easy-to-clean beauty gives sparkling good looks to coffee-makers and roasters, a lifetime of service to vital working parts of washers and refrigerators.

The discovery is being made daily by plant managers and engineers that better products just naturally result from using this better steel. Allegheny Metal fits profitably somewhere in almost any product or process. Where can we help *you* to utilize its many highly-developed properties of strength, corrosion and heat-resistance . . . its ease of welding and fabrication?

Now that supplies are on the increase, Allegheny Metal is available to your order in all forms. Let us show you how this time-tested stainless steel can streamline your production problems with surprising economy, and give you invaluable competitive advantages, too . . .

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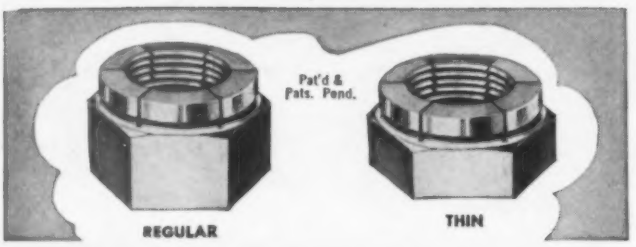

FLEXLOC

SELF-LOCKING NUTS

"Flexloc" is of one-piece all-metal construction, available in U.S.S. and S.A.E. thread series. Every thread of the "Flexloc" — including the locking threads — takes its share of the load, and the torque is unusually uniform because it is controlled. "Flexloc" accommodates itself to a wide range of tolerances . . . can be used over and over again, without losing much of its locking torque . . . is not affected by temperatures likely to be met within the field of Mechanical Engineering . . . being a "stop" nut, it *stays* locked in any position on the threaded member.

It is made by the manufacturers of the unexcelled "Unbrako" Socket Screw Products — guaranteeing quality. Sizes from #6 to 2" in diameter, — in both "regular" and "thin" types (shown above).

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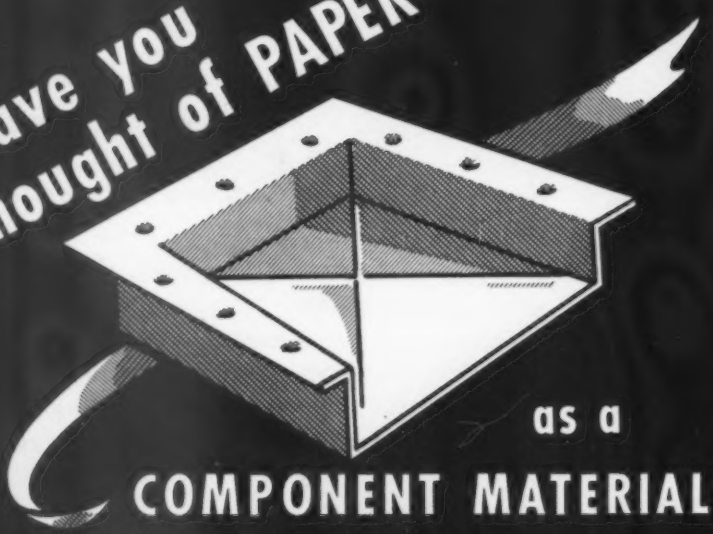

Today special papers manufactured by Central are replacing metal, cloth and many other materials . . . improving product design . . . lowering costs . . . increasing production.

There may be a place in your product where an engineered paper by Central can improve its quality or lower its cost. Consult Central Paper Engineers about your problems . . . their expert advice is yours for the asking.

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BRANCHES IN LEADING CITIES

(*Continued from page 264*)

hygiene service can help to detect and correct the cause.

The Industrial Hygiene Division of the U. S. Public Health Service, which has its headquarters in Washington, D.C., is the national agency responsible for the protection of workers' health. Consultants representing the Division are stationed in Public Health Service District Offices throughout the country. Direct service to industry is rendered by State bureaus of industrial hygiene, which are located in State departments of health except in Massachusetts and New York, where they are part of the Labor Department. A number of cities also have municipal industrial hygiene divisions.

Typical services offered include:

Chemical

Analysis of the solvent to determine its composition (where this is not indicated on the container). Analysis of the workroom air to determine whether the air is being kept sufficiently safe.

Engineering

Survey of engineering controls; consultation on the design or improvement of ventilating systems and on personal protective clothing and respirators.

Medical

Survey to determine whether workers show signs of exposure to solvents or other toxic materials; assistance in setting up a medical and nursing service suitable for the size of plant involved; assistance in planning an effective health program with adequate records.

Educational

Lecturers who will advise workers and management on such matters as the safe methods of handling solvents and the use of safety equipment. Literature for both plant management and workers is frequently available.

17TH PACKAGING EXPOSITION SET FOR CLEVELAND, APRIL 26-30

The American Management Association announces that its 17th annual Packaging Exposition, largest in the history of the event, will be held April 26-30, 1948, in the Public Auditorium at Cleveland, Ohio. Approximately 200 exhibitors will utilize 100,000 square feet to display developments in packaging, packing and shipping machinery, equipment, materials, design and services which are used in the manufacture and sale of virtually every product in the nation's commerce.

The 17th Exposition marks the first time in four years the event will be held in the mid-west and the first time in its history that it is scheduled for five days instead of four. Extension of the schedule was determined after last year's show in Philadelphia was crowded by a trade attendance of 16,000 and exhibitors requested the additional time.

The annual three-day AMA Confer-

(*Please turn to page 268*)

ANNOUNCING A NEW AND LARGER

Size Range

OF ELECTRUNITE STAINLESS STEEL TUBING

...made of Republic Enduro

Now, whatever your requirements for stainless steel tubing, you'll find the answer in ELECTRUNITE Tubing made of time-tested Republic ENDURO.

In addition to the many standard tubing sizes, ELECTRUNITE *is available* in a range of much-in-demand Standard and "Schedule 10" pipe sizes—made by the same superior forming and welding process which distinguishes all ELECTRUNITE Stainless Steel Tubing.

Complete information is available upon request. Call your nearest Steel and Tubes district office, or write for full details.

STAINLESS STEEL MECHANICAL AND PRESSURE TUBING

These are common sizes. A limited number of other sizes can be made by welding direct to size, and intermediate sizes can be made by cold drawing. Wall thicknesses heavier than those shown may be obtained in most sizes. Many geometric shapes other than round can be supplied with limits of a 9½" periphery.

OUTSIDE DIAMETER	GAUGE RANGE	OUTSIDE DIAMETER	GAUGE RANGE
⅜"	16-22	1½"	10-20
7/16"	16-22	1⅝"	10-20
½"	14-22	1¾"	10-20
⅝"	14-21	1⅞"	10-20
11/16"	14-21	2"	9-20
¾"	13-20	2⅛"	9-20
⅞"	12-20	2¼"	9-20
1"	11-20	2⅜"	8-20
1 1/16"	11-20	2½"	8-20
1⅛"	11-20	2⅝"	8-18
1¼"	11-20	2¾"	8-18
1 5/16"	11-20	2⅞"	8-18
1⅜"	11-20	3"	8-18

The above sizes are available in types 304, 309S, 310, 316, 317, 347, 430 and 446.
Type 302 is available in a limited range of sizes for ornamental use only.

STAINLESS STEEL PIPE

NOMINAL PIPE SIZE	OUTSIDE DIAMETER	SCHEDULE 40 STANDARD PIPE WALL THICKNESS	SCHEDULE 10 LIGHT WALL PIPE WALL THICKNESS
⅛"	.405	.068	.049
¼"	.540	.088	.065
⅜"	.675	.091	.065
½"	.840	.109	.083
¾"	1.050	.113	.083
1"	1.315	.133	.109
1¼"	1.660	.140	.109
1½"	1.900	.145	.109
2"	2.375	.154	.109

The above Pipe Sizes are available in the Chrome-Nickel analyses of Enduro Stainless Steel.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION • CLEVELAND 8, OHIO
Export Dept.: Chrysler Bldg., New York 17, N.Y.

Republic REPUBLIC STEEL
ELECTRUNITE
STAINLESS STEEL TUBING

Standard Quality makes them a Quality Standard

On Nearby Shelves of Industrial Supply Distributors.

BAY STATE TAP & DIE COMPANY
MANSFIELD, MASSACHUSETTS

BAY STATE
TAPS & DIES

(*Continued from page 265*)

ence on Packaging, Packing and Shipping will also be held in the Cleveland Auditorium April 27-29 concurrent with the Exposition. More than a thousand packaging executives, engineers and technical experts who are members of AMA's Packaging Division will discuss the management aspects of materials, methods, procedures and merchandising.

Alvin E. Dodd, AMA president, 330 W. 42nd St., New York, said arrangements for the Packaging Exposition are being made by the Exposition Exhibitors' Advisory Committee of which Alan S. Cole, general manager of Modern Packaging, New York, is chairman.

* * *

"TAILOR-MADE" PLASTICS INTRODUCED BY PITTSBURGH PLATE

Selectron resins, the highly versatile plastics developed by the Pittsburgh Plate Glass Company research laboratories for top-secret wartime radar and aircraft applications, have been converted for an almost limitless field of post-war applications, it was announced by Dr. Howard L. Gerhart, director of Pittsburgh's plastic research laboratory, Milwaukee, Wis.

"In order to provide a maximum service," Dr. Gerhart stated, "we have adopted a policy that is equivalent to producing tailor-made resins. Each of the Selectron series of resins has been designed to meet a specific application or type of application in industry. Variations of viscosity, adhesive quality and curing conditions are all taken into consideration. Within limits, we are making the resins available in specifications individually designed to the customer's needs."

Sensational in the plastics field because of their simplicity of handling, applications of the selectron series of resins include laminating, impregnating, casting, molding, and usages as adhesives.

"Magic Plastics"

Distributors are already employing the "magic plastics" for laminating hard-finish, stain-resistant decorative material for walls and table tops; for preserving specimens of all varieties including sections of the human body for use in anatomy schools and laboratories and for coating cinder-brick to produce a durable, highly decorative building material.

Other Selectron application range from the production of plastic bowling balls, golf clubs, boats, jewelry, aircraft parts and automobile bodies to protective films for bottle caps.

Large Viscosity Range

Attributes that have placed the Selectron resins in the "magic plastic" category are their availability at almost any viscosity with differing adhesive qualities, capable of curing under any practical operating condition.

The range of the Selectron series differs in strength, hardness, flexibility, resistance to heat, electrical properties, abrasion resistance water absorption and other properties from which the essential physical requirements of any plastics application may be met.

(*Please turn to page 270*)

MAKE HEAVY WORK A *Soft* TOUCH

WITH A *New Britain* MOBILE EQUIPMENT SET

Here's a balanced collection of drive tools that puts power in the palm of your hand!

Twelve- and eight-point ½" drive sockets . . . rugged ¾" sockets . . . handles and extensions for both types . . . it's a set fit to breeze through your heaviest jobs. Every piece is worked with famous New Britain precision to the peak of pulling perfection! And every piece is designed to bring you maximum power with a minimum of weight. There's no idle bulk here . . . each socket, handle and extension is trimmed down to reach into the tightest places and toughened for turning the tightest nuts.

On heavy plant mobile equipment or any heavy factory installations . . . wherever the going is rough, here is the set that will smooth your way! See your Mill Supply Jobber *today* about this fine investment in job and knuckle insurance! The New Britain Machine Co., New Britain, Conn.

The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

New Britain

GREATER STRENGTH • BETTER FIT **HAND TOOLS**

The Caster that Forgot Its Rubbers

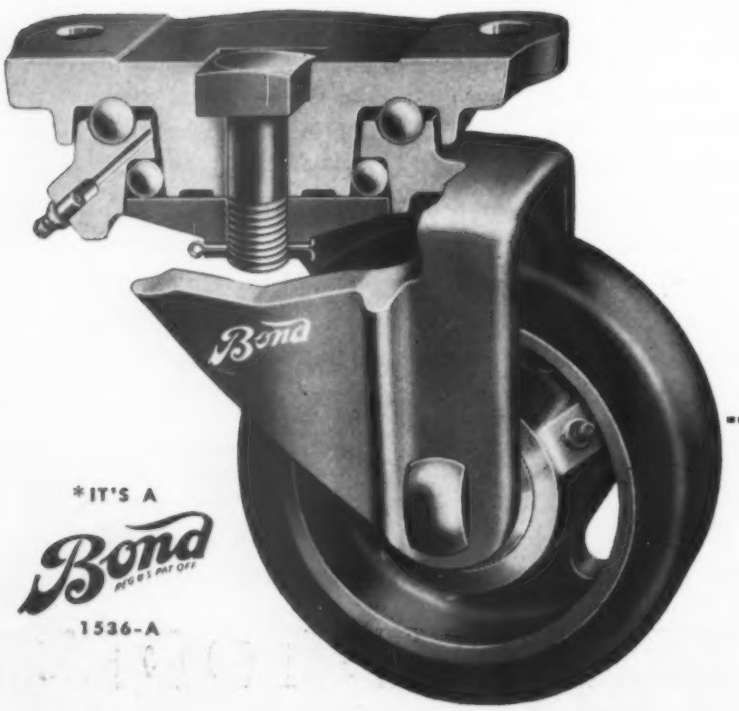
It raised a storm of protest. "Ouch, no rubber treads," the plant floors yelled. The caster's metal wheels splintered the floors. The plant superintendent groaned. Repairs were frequent. Delays were costly. This caster was rugged . . . ready to take a beating, but it just wasn't right for the job.

THE CASTER* THAT
spares your floors
Speeds Your Handling

EVERY Bond caster is designed for the conditions it meets in actual operation. Vulcanized-on rubber tread wheels save your floors. Double ball race Bond casters take your loads . . . take the turns. They swivel easily and are easy on your men.

Get the caster that's exactly right for your operation. Get the free Bond catalog K-36. Sent on request.

BOND FOUNDRY & MACHINE COMPANY
MANHEIM • PENNSYLVANIA



*IT'S A Bond REG. U.S. PAT. OFF.
1536-A

NEW METAL POWDER PRESS

The use of metal powders for the fabrication of parts is a technique that industry is fast beginning to appreciate as a real economical production system, states the DoAll Co., Des Plaines, Ill., in making announcement of 30-60-ton and 100-ton Continental powder presses.

The increased use, according to DoAll, is due to the extensive research in the past few years which has greatly extended the range of powder metal applications. Some of the production economies that can be effected are startling, and it is good practice to investigate the possibilities of using metal powders to produce production parts.

Parts that require multiple machining or those that are intricate in design should be so analyzed. For instance, a hardened steel gear of about 1" in diameter, 20 pitch with a ⅛" face having an eccentric cam on one side can be produced for one cent as compared to other methods which run from five to twenty times higher. In the automotive industry metal powder parts are used extensively. One manufacturer is using 300 parts per car.

Parts can be made up to 150 per minute on Continental powder press.

Research during the past few years has solved most problems connected with compounded blends of various metal powders. Today, the possibilities of duplicating the physical characteristics of any metal are practically unlimited in this field. Some metal powder parts have been known to develop tensile strength of 200,000 pounds per square inch. All kinds of ferrous and non-ferrous metals and alloys can be used in the metal powder process. It is also possible to use combinations of metals which cannot be made by casting. As an illustration, brake discs are made by the metal powder process using bronze and silica. Tungsten carbide and other carbides are also used in this process which often eliminates further machining operations. Metal powder has done an outstanding job for parts that require unusual electrical qualities. Stainless steel parts and abrasion resisting metals are all readily made by this process.

The degree of hardness in any part is controlled by the introduction of sufficient carbon in the powder and proper quenching immediately after the sintering operation.

(*Please turn to page* 272)

How to Add A Mechanical Rubber Department to Your Plant

[WITHOUT ONE CENT OF CAPITAL INVESTMENT BY YOUR COMPANY]

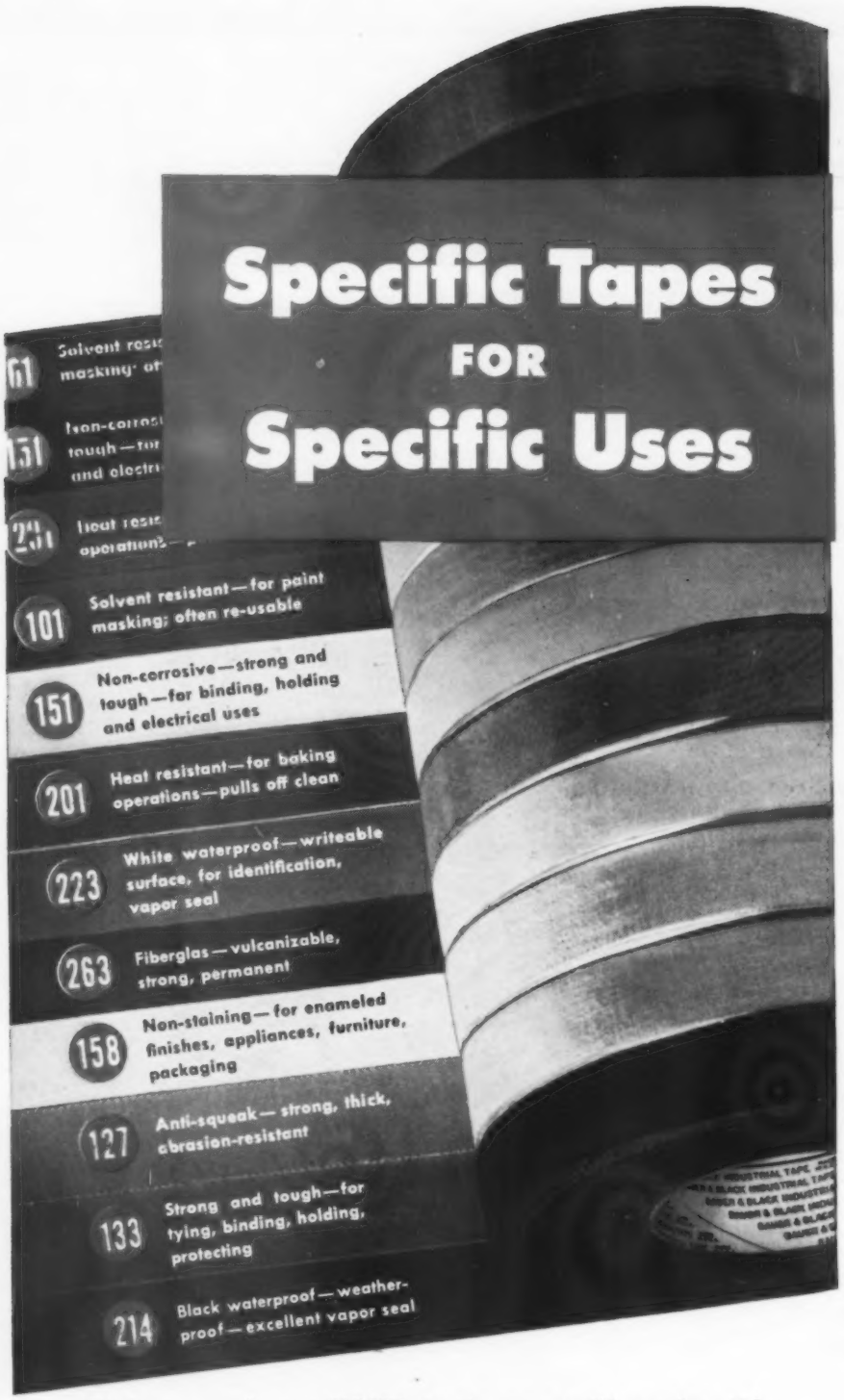
As specialists in producing to customers' specifications, the close relationship between your company and ours can be almost like adding a mechanical rubber department to your plant.

For example, we are prepared to help you develop new parts of rubber or synthetic rubber; or develop the best compounds for specific needs; or design the most practical molds and dies; or engineer special tools and equipment for uniformity and economy of production; or solve problems of bonding rubber to other materials. Of course, our production techniques are developed to meet large-scale production schedules also. Suggestion: Ask us to have our representative in your area discuss details of YOUR specific requirements.

THE OHIO RUBBER COMPANY
WILLOUGHBY, OHIO

OHIO RUBBER CO

FACTORIES: WILLOUGHBY, OHIO • LONG BEACH, CALIF. • CONNEAUTVILLE, PA.
BRANCH OFFICES: DETROIT • NEW YORK • CHICAGO • INDIANAPOLIS • CLEVELAND • BOSTON


Specific Tapes
FOR
Specific Uses
101 Solvent resistant—for paint masking; often re-usable
151 Non-corrosive—strong and tough—for binding, holding and electrical uses
201 Heat resistant—for baking operations—pulls off clean
223 White waterproof—writeable surface, for identification, vapor seal
263 Fiberglas—vulcanizable, strong, permanent
158 Non-staining—for enameled finishes, appliances, furniture, packaging
127 Anti-squeak—strong, thick, abrasion-resistant
133 Strong and tough—for tying, binding, holding, protecting
214 Black waterproof—weather-proof—excellent vapor seal

Either we have YOUR tape or we'll make it!

Bauer & Black has helped hundreds of industries find the right tape for the right job. If, among the few tapes shown here, you don't find *yours*, write Dept. 9-2 today for free Technical Consultant Service. If necessary and to our mutual advantage, we'll *make* the tape you need.

Products of

BAUER & BLACK

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

(*Continued from page 270*)

In many cases metal powder parts require no further machining operation. DoAll stresses that a most important factor in the metal powder process is the press, for it is the press that assures proper density in the shape to be formed.

In the 30-60 ton Continental press, pressures are applied from the top and bottom as well as side pressures simultaneous through hydraulic cylinders. The cylinder set-up and ram action adapt the press to a wide variety of shapes either cored or solid. Production rates are dependent on the size part being produced. Parts can be made up to 150 per minute.

NEW FURNACE DESIGNS BURN BY-PRODUCTS FUELS

Combustion engineers are meeting the challenge of advancing costs of standard fuels by developing new types of furnaces which will burn low-cost substitute fuels in industrial processes, it was revealed at a fuels session of the Annual Meeting of The American Society of Mechanical Engineers, by Otto de Lorenzi, director of education of the Combustion Engineering Company, New York.

In his paper, "Furnaces for By-Products Fuels," Mr. de Lorenzi said that furnace designs already have been developed to handle by-product fuels from oil refinery operations, and from the manufacture of steel, coke, lumber, pulp and sugar. Other furnaces are in experimental stages and many improvements in methods of drying, feeding, and burning the fuels soon will be available. These industrial by-products, formerly regarded as necessary waste, may be used to supplement and even to replace standard fuels such as coal, oil and gas, thereby saving "fuel dollars" for the manufacturer, he said.

By-products from oil refineries include a solid residue called asphaltic pitch, which under certain temperature conditions becomes fluid and can be burned without difficulty. Petroleum coke is another solid residue remaining after the cracking process. Some of this by-product can be pulverized and burned. Acid sludge is another by-product used in refineries to supplement gas or oil.

Two principal by-product fuels from steel mill operations are blast furnace gas and coke breeze, the latter a coke which is too small even for domestic heating. The largest quantity burned comes from the manufacture of metallurgical coke.

The lumber industries' great sawmills, located in the Northwest, provide large quantities of wood waste for steam generation. Some of this wood is burned at the mill to supply needed power, while much is sold for use in utility and industrial power plants within easy shipping distance, to replace coal or oil.

Paper mill by-products include woodroom refuse in the form of wet bark, culled wood, sawdust, butt ends; and spent alkaline liquors from chemical proc-

(*Please turn to page 274*)

For faster, better piping jobs get everything from CRANE

An all-Crane installation! That's a sure way to keep piping jobs moving swiftly and smoothly—from design to erection to maintenance. Crane quality throughout—in valves, fittings, pipe, accessories, and fabricated piping—makes dependable performance a foregone conclusion.

ONE SOURCE OF SUPPLY
ONE RESPONSIBILITY
STANDARD OF QUALITY

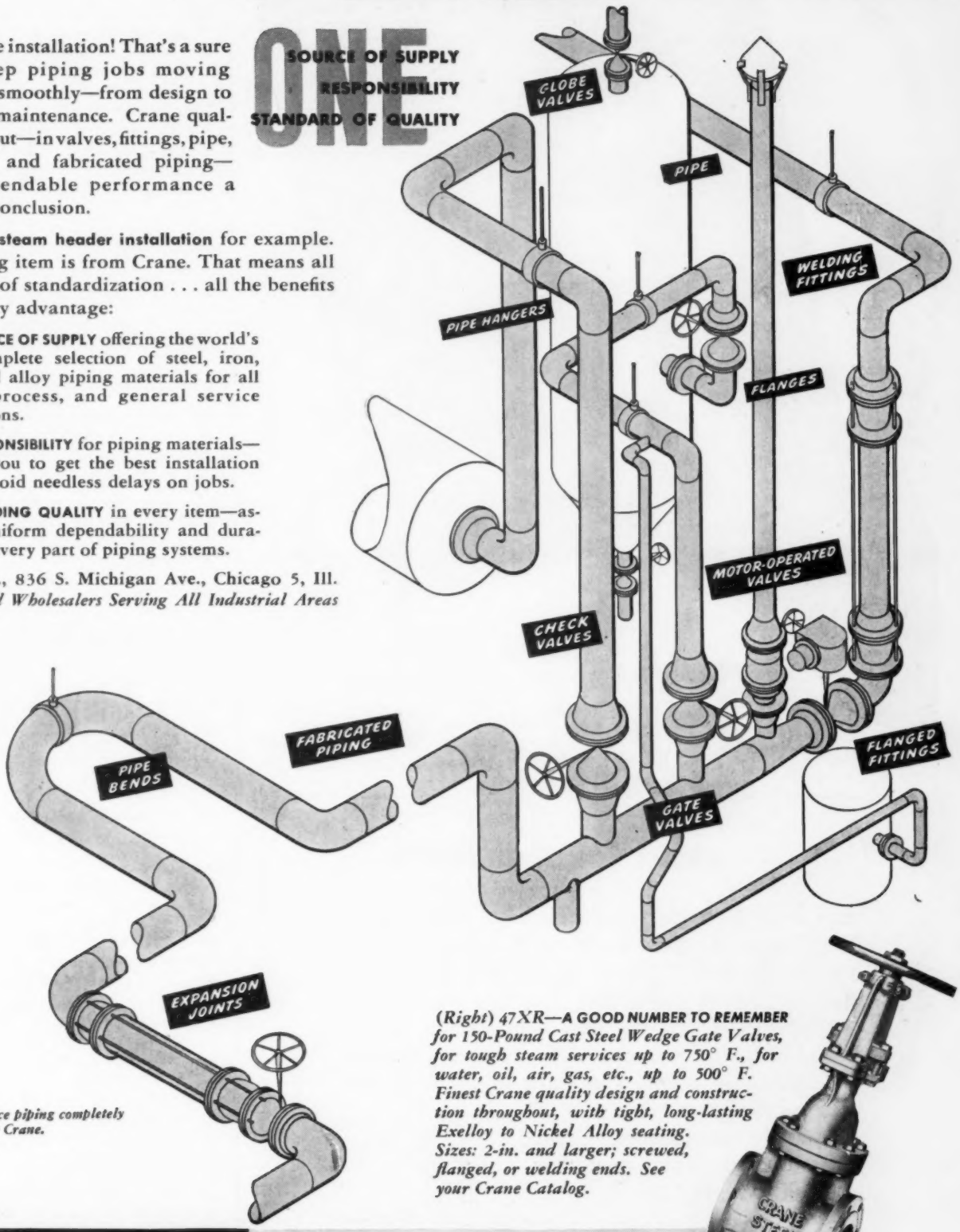
Look at this steam header installation for example. Every piping item is from Crane. That means all the benefits of standardization . . . all the benefits of this 3-way advantage:

ONE SOURCE OF SUPPLY offering the world's most complete selection of steel, iron, brass and alloy piping materials for all power, process, and general service applications.

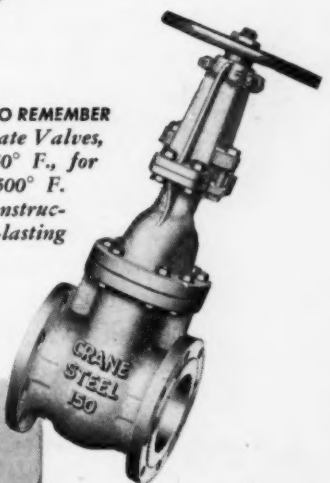
ONE RESPONSIBILITY for piping materials—helping you to get the best installation and to avoid needless delays on jobs.

OUTSTANDING QUALITY in every item—assuring uniform dependability and durability in every part of piping systems.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas



Steam service piping completely equipped by Crane.



(Right) 47XR—**A GOOD NUMBER TO REMEMBER** *for 150-Pound Cast Steel Wedge Gate Valves, for tough steam services up to 750° F., for water, oil, air, gas, etc., up to 500° F. Finest Crane quality design and construction throughout, with tight, long-lasting Exelloy to Nickel Alloy seating. Sizes: 2-in. and larger; screwed, flanged, or welding ends. See your Crane Catalog.*

EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

If you use

Slings

send for this Book

THIS New 28-PAGE BOOK tells what you need to know about sling chains in general—ACCO REGISTERED SLING CHAINS in particular. For example, on page 3 you'll find 7 points you should consider when ordering sling chains. The rest of the book gives you complete information that will help you select the right sling chain for your particular needs.

Send to Bridgeport, Conn., for your copy of this new booklet. Ask for DH-1124-D.

UNIVERSAL SAFETY

MEMBER
THE NATIONAL SAFETY COUNCIL

ACCO

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

(*Continued from page 272*)

esses employed.

In the manufacture of sugar, one of the by-products is cane trash, known as "bagasse," the refuse remaining after the juice is extracted from the sugar cane. Steam requirements of raw sugar mills are easily supplied through this bagasse while white-sugar refineries supplement the supply with other fuels.

At the same session H. R. Hazard, research engineer of Battelle Memorial Institute, Columbus, O., gave a paper on "Experimental Combustion of Pulverized Coal at Atmospheric and Elevated Pressures." The reaction rate of pulverized coal is not influenced by pressure, according to studies made, so that existing data on reaction rates at atmospheric pressure are applicable to gas-turbine conditions. Preliminary work toward development of a pulverized-coal burning gas turbine combustor was described.

* * *

NEW LIGHTWEIGHT MOTOR

Announcement of a new electric motor said to be by far the lightest one of its size, rating and capacity has just been made by the manufacturer, Crozier Machine Tool Co., Hawthorne, California. It is heavy duty and/or long hour of capacitator type—single phase, ½ horse power, 115/230 volts. Due to its

The workhorse weighs 29 pounds.

low slippage, 2 pole develops 3,520 RPM, 4 pole, 1,760 RPM. Draws 6.8 amp. on 110 volts and 3.4 amps. on 220 volts. The light weight is due to aluminum end brackets and simplicity of construction. It operates on either 50 or 60 cycles. The trade name: Workhorse. The weight is 29 lbs. It has an extra strong 16 gauge sheet case and is lubrication-sealed for life. Having ball bearings throughout it can be run in any position, operating at 40° temperature.

The Workhorse has a welded steel stator frame, found only in the best of motors. The cast aluminum squirrel cage is made by an exclusive Crozier centrifugal casting process.

A highly efficient cooling system constantly circulates air between the frame and the laminations—another feature found only in the best of motors. The winding is heavy Fornvar insulated wire which is later varnish impregnated and baked. Starting torque is 220% and motor will withstand a 25% overload indefinitely. 3-phase, ¾ horse also available as well as special mountings for specific installations.

(*Please turn to page 276*)

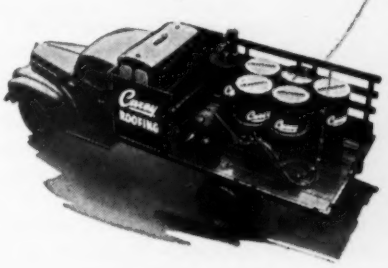
...give it a Carey-spray.

"CAREY-SPRAY" means better roof maintenance for you! With recently developed high pressure spraying equipment, Carey Roof Coatings and Cold Process Roof Cements are now applied to all types of roof jobs.

THAT'S "CAREY-SPRAY"

This faster way is a better, cleaner way. It gives you a uniform coating with a minimum of muss and fuss in a minimum of time. It gets the job done . . . instead of half finished . . . "while the sun shines." The spray method takes Carey Coatings from the original container direct to the roof. No fussing with broom and hoist—no lugging of pails. A truck-mounted Alemite Versatal Spray unit merely drives to the job-site and goes to work. It's as simple as that!

NOW you can "Carey-Spray" your roofs with such time-proved products as Careyclad Coating, Carey Fibercoating, Flextop, Enamelclad and Carex Coating. Now, too, you can have a Carey Cold Process Built-up Roof applied, without heat or brush, by Alemite Versatal Spray methods. To take advantage of Carey's more than 50 years experience in roofing and roof maintenance, call your nearest Carey Approved Roofer or write direct.



LOOK AT THESE "CAREY-SPRAY" *features!*

- ✔ Complete, uniform coverage
- ✔ Quick, easy, clean application
- ✔ Efficient—no hoists, no mess, no clutter. All spraying equipment is on one truck.

results ...tight job, good seal, minimum cost

Carey.

THE PHILIP CAREY MANUFACTURING CO., CINCINNATI 15, OHIO

In Canada: The Philip Carey Co., Ltd.
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Industrial Insulation • Rock Wool Insulation
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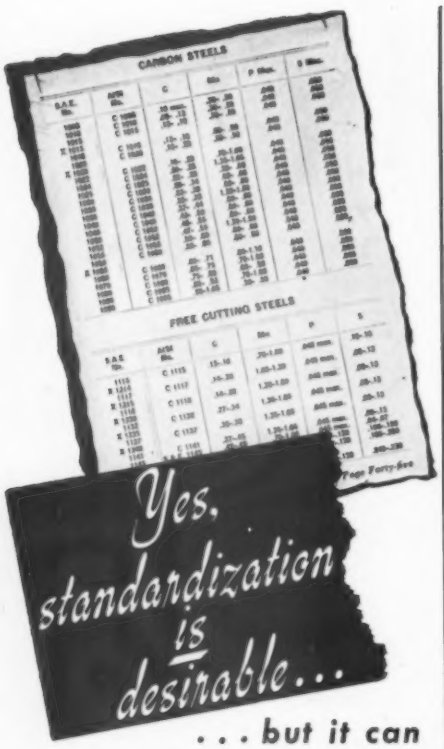
Asphalt Tile Flooring • Waterproofing Materials
Expansion Joint • Asbestos Shingles & Siding
Corrugated Asbestos Roofing and Siding
Miami-Carey Bathroom Cabinets & Accessories



. . . but it can also cause trouble when it comes to Cutting Fluids

While it is obvious that the number of different types of cutting fluids used in any plant should be kept to a minimum, over-standardization can be very costly. There is no universal "one-shot" cutting fluid. The many variables involved in the wide variety of machining operations encountered in most shops make it difficult for any one individual to make the most intelligent selection and application of cutting fluids. The D. A. Stuart Oil representative has behind him the resources of 82 years' company experience, a finely equipped laboratory and a sound list of products. He will not be unsupported when he calls to help you. His recommendations will not call for more different fluids than are essential to maximum performance, but on the contrary, may result in a decrease in the number of oils used in your shop.

Literally thousands of authenticated case studies prove Stuart products, coupled with Stuart service, almost always result in greater production, better finishes and longer tool life. Don't overlook the opportunities afforded by proper cutting fluids properly applied. Write today and ask for D. A. Stuart's booklet, "Cutting Fluids for Better Machining".

STUART *oil engineering goes with every barrel*

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EST. 1865 LIMITED

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NATIONAL OIL SUPPLY REPORTED ADEQUATE

Known reserves of record proportions assure a continuing supply of petroleum fuels and lubricants, yet higher prices must be expected, according to W. M. Holaday, Socony-Vacuum Laboratories, New York, speaker at recent annual meeting of the SAE at Detroit. Even with current domestic consumption exceeding 5,000,000 barrels daily, reserves are larger than at any other time, but the greater effort required to recover crude oil and to convert natural gas and coal into liquid products necessitates higher prices. Mr. Holaday said that current spot shortages arise chiefly from lack of transportation and refining facilities in certain areas.

Discovery costs of crude oil were estimated to have risen to an average of 54¢ per barrel in 1946 from 16¢ per barrel in 1936, with the average investment in a new well rising to approximately $600,000, largely because of the necessity for drilling to greater depths. Better than 95 per cent of the nation's refining capacity now is being utilized, Mr. Holaday said, and the petroleum industry must expend upwards of $1,500,000,000 to increase refining and distributing facilities to handle an additional 1,000,000 barrels of crude oil daily. He estimated that even without improving product quality, it would cost a total of $4,250,000,000 to increase the nation's oil producing, oil refining, and products distribution facilities to required capacities.

* * *

ALUMINUM USES EXPAND

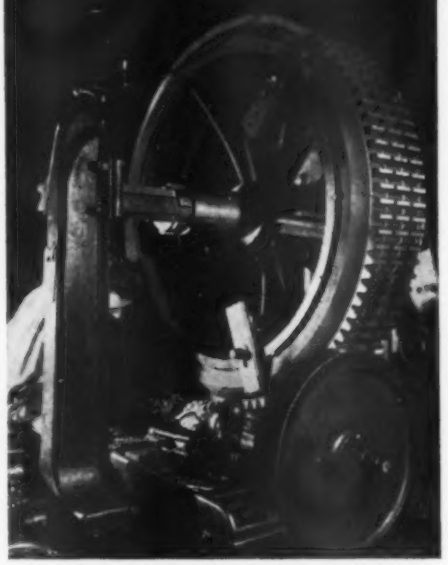
Aluminum is the only basic material that is cheaper today than before the war, states David P. Reynolds, vice president of the Reynolds Metals Co., Louisville, Ky. While composite price of other metals has risen more than 100% since 1939, the base price of aluminum has decreased 30%, making aluminum more competitive than ever before. In fact, introduction of a new aluminum alloy in sheet form especially designed for sheet metal work at approximately 22¢ per pound now makes aluminum directly competitive with other common metals at 7 1/3¢ per pound due to the 3-to-1 weight ratio. Mr. Reynolds stated that rapidly rising costs indicate price advances will soon be necessary in a number of mill products.

Electric wire, cable and bus bar applications are expected to consume large amounts of aluminum in 1948 because aluminum is lower in cost than copper and is immediately available. Closely related is the use of aluminum for electric outlet boxes.

Manufacturers of items for construction of homes, as well as commmercial, industrial and farm buildings, increased their consumption of aluminum amazingly. For example, maximum number of aluminum windows made in any previous year was approximately 25,000. This compares with 2,500,000 made in 1947. New items

(*Please turn to page* 278)

LARGE CUT GEARS



Cutting three identical spur gears simultaneously at Simonds Gear.

Cut Gears for Industrial Needs!

For special gears in larger sizes—exact duplicate gears for replacements—for every heavy-duty industrial gear application—look to SIMONDS GEAR where specialty gears for heavy industry have been a custom service for more than 50 years. Within easy shipping distance of many heavy industry plants—with a personalized service designed to meet your most exacting specifications—SIMONDS GEAR provides an unusually prompt and efficient service on even the most unusual gear requirements. Sizes range up to 145" dia. in all popular gear-making materials. Send your inquiry today and get acquainted with SIMONDS GEAR Service.

SPUR GEARS
BEVEL GEARS • MITRE GEARS
WORMS • WORM GEARS
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Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

. . . You get everything . . .

your piping job needs

in the TAYLOR FORGE *line*

Widest range of types . . . sizes . . . weights . . . materials

To Taylor Forge "full line" means just what it says. The broad Taylor Forge line—more complete than that of any other manufacturer—includes practically every type of fitting, every weight, every size, and every material ever needed in pipe welding.

Yes, Weldells have everything

TAYLOR FORGE
& PIPE WORKS

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EASTERN PLANT: CARNEGIE, PA.

DISTRICT OFFICES

New York: 50 Church Street Philadelphia: Broad Street Station Bldg.
Chicago District Sales: 208 S. LaSalle Street
Houston: City National Bank Bldg. Los Angeles: Subway Terminal Bldg.

ARMCO'S NEW "ELC" RESISTS CORROSION

Now you can save money and avoid future service troubles by using the new ARMCO Stainless Steel Type 316 ELC (Extra Low Carbon) in welded processing equipment.

Annealing after welding is no longer necessary to prevent intergranular corrosion. Type 316 ELC staunchly resists corrosive attack near the welds when your equipment is in service. The reason is, this special ARMCO Stainless Steel has a *maximum carbon content of .03%*.

Heretofore, in some welded equipment, the excellent corrosion resistance of Type 316 has been safeguarded by the addition of columbium as a carbon-stabilizer.

Now the extremely low carbon content of ARMCO Type 316 ELC accomplishes the same purposes—*at less cost.*

This new grade is ideal for welded equipment exposed to corrosive conditions at temperatures below the sensitizing range. It can be used in equipment for the production of textiles, chemicals, pulp and paper, oil, and in other processing industries.

Get more information about ARMCO "ELC" Stainless Steel. Find out how *you* can take advantage of the special corrosion-resistant properties of this stainless steel. Write The American Rolling Mill Company, 185 Curtis Street, Middletown, Ohio. Or get in touch with your nearest distributor.

ARMCO

ARMCO STAINLESS STEELS

(*Continued from page 276*)

being put into production include gutters and downspouts; aluminum wall panels, studs and trusses for home and industrial construction, colorful wall tile for domestic and commercial applications; new industrial roofing and siding, and a new type of roll roofing.

Other developments include truck and trailer bodies, aluminum boats stamped in one piece; railroad hopper and refrigerator cars, aluminum furniture, and a line of aluminum golf clubs.

The automotive industry is substituting aluminum parts for parts formerly made of steel. While use of aluminum in passenger cars previously averaged something like 10 pounds per car, 1947 saw this average rise to around 20-30. The trend is rising sharply with 100 pounds per car within the realm of possibility for 1948.

Other manufacturers using increased quantities of aluminum are in the agricultural equipment, furnace and stove, and sign fields.

Estimated production of primary aluminum by the whole U. S. Aluminum industry during 1947 is placed at 1,140,000,000 pounds, an increase of 39 percent over 1946.

* * *

CHART ON INDUCTION HEATING AND MELTING EQUIPMENT

Quick guide for the selection of induction heating and melting equipment, has been published by the Ajax Electrothermic Corp., Trenton 5, N. J. It indicates the "best" type of equipment for every application, based on power and frequency. The experience on which the chart is based ranges from the first use of high frequency heating and melting in 1916 to the present day. The chart includes ratings or motor-generator, mercury-hydrogen spark-gap, quenched gap, and vacuum tube types of equipment.

* * *

GRIDDED BEARING

Illustration shows cross section of N-B-M gridded bearings announced by the National Bearing Division of the American Brake Shoe Co., St. Louis 10, Mo., which, it is stated are being used with highly successful results in Diesel engines and heavy machinery. National Bearing engineers developed a simple mechanical method of gridding that makes gridded bearings practical for mass production.

The new bearing, it is claimed, is an almost ideal combination of good bearing properties: The gridded area provides conformability in a strong bronze bearing, plus embedability equal to that of the babbitts. It also overcomes objections to using bronze with a shaft that is not hardened, because the gridded bearing is "self-healing". In periods of great over-stress, some of the babbitt melts out of the grids and forms a running surface that prevents seizure.

(*Please turn to page 280*)

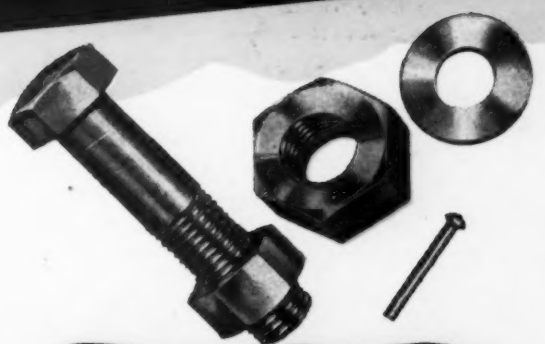
IT'S HARPER *Everlasting Fastenings*
TEN TO ONE OVER COMMON STEEL

Here's the score, 10 or more reasons for using everlasting fastenings . . . *just 1 for common steel.* An amazing combination of advantages in favor of non-ferrous and stainless bolt and nut products . . . only lower first cost in favor of common steel. Check the list against your own fastening requirements. Write us for details.

RESISTANCE TO RUST
RESISTANCE TO CORROSION
NON-MAGNETIC
NON-SPARKING
RE-USABLE
ATTRACTIVE APPEARANCE
EASY TO CLEAN
HIGH STRENGTH
LONG SERVICE LIFE
LOWER ULTIMATE COST

10 TO 1

LOWER FIRST COST



Prompt Shipments from Stock . . . . . .

Harper maintains stocks of over 5000 different items . . . large quantities of each. Others being added constantly. Specials made to order from ample stocks of new metals. Write for summarized catalog.

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2606 FLETCHER STREET • CHICAGO 18, ILLINOIS
Branch Offices: Los Angeles, New York City, Boston, Philadelphia, Milwaukee, Cincinnati, Dallas, Cleveland, St. Louis.
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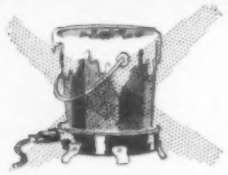
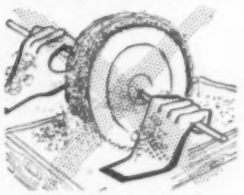
"Look, Hotchkiss . . . we replaced set-up wheels with Armour belts to increase production, not to help you keep up with the Book-of-the-Month Club!"

WHY USE COATED ABRASIVE BELTS?

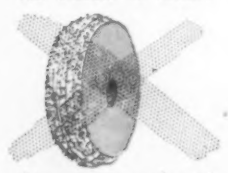
1. THEY ARE MORE ACCURATE!
2. THEY GRIND FASTER, BETTER!
3. THEY ARE MORE ECONOMICAL!



No glue to mix!



No wheels to dress!



No uneven surfaces!

The need for faster, better production is responsible for the conversion to the abrasive belt backstand method of grinding and polishing from the set-up wheel method.

Here's why coated abrasive belts are able to boost production while lowering costs. Belts . . .

- when worn, take 75% less time to replace than is needed to dress a wheel.
- Greatly reduce danger of discoloring, warping and flowing caused by frictional heat.
- Never vary in accuracy of work regardless of wear.
- Do not require personnel needed to dress set-up wheels.
- Reduce inventory problems due to elimination of wheels, glue cements, and various grains.
- Improve quality of work with less operator fatigue.

Armour's uniform, factory-made abrasive belts are only part of Armour's complete line of abrasives designed for better performance, longer wear, greater economy.

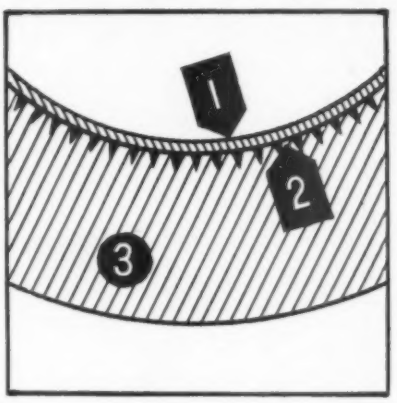
ARMOUR and Company

Coated Abrasives Division

1355 WEST 31ST STREET • CHICAGO 9, ILLINOIS

(*Continued from page 278*)

Where an ordinary bearing would seize and fail, the babbitted grids provide a safety factor that prevents damage to the shaft. A 0.002" run-in surface of lead-tin electroplated in the bore increases the seizure resistance and corrosion resistance of the gridded bearing.



Cross section of N-B-M gridded bearing, showing (1) .002" lead-tin alloy "run-in" surface; (2) precision-spaced grids filled with N-N-M silver babbitt; (3) centrifugally cast lead-bronze shell.

According to the company, present applications of gridded bearings are main and connecting rods of heavily-loaded Diesel engines and similar heavy-duty service. They are now operating under loads of 3,500 p.s.i. projected area, with shafts as low as 160 Brinnel hardness. Minimum depth of grids is .008"; minimum area of babbitt is 40%. The required balance of conformability and embedability for individual applications is obtained by controlling the proportion of land (parent bronze) and the babbitt-filled grid.

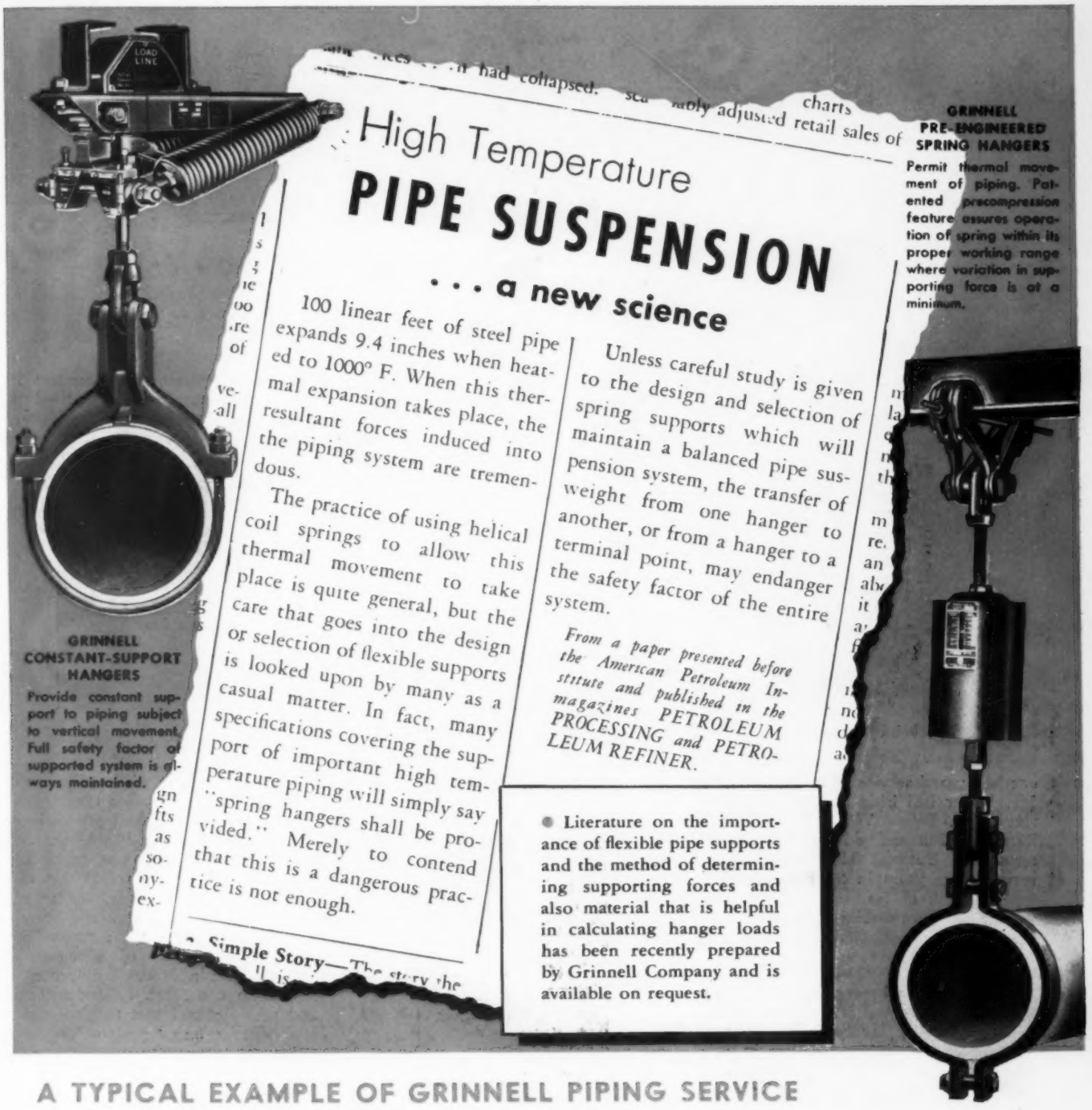
N-B-M gridded bearings are customarily made as half bushings, but can be furnished as full cylindrical bearings if desired. Complete engineering data available upon request.

COMMERCIAL STANDARD FOR DOUGLAS FIR PLYWOOD

The seventh edition of the Commercial Standard for Douglas Fir Plywood has been issued by the National Bureau of Standards. Copies of the pamphlet embodying the revised commercial standard (issued as CS45-47) may be obtained at 10 cents each from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

SHEPARD HEADS ELECTRIC INDUSTRIAL TRUCK ASSN.

F. J. Shepard, Jr., of Boston, Mass., was recently elected president of the Electric Industrial Truck Association, which comprises approximately 80% of the manufacturers of electric industrial trucks in the United States. He is treasurer of Lewis-Shepard Products, Inc., Watertown, Mass.


had collapsed.
charts
adly adjusted retail sales of
High Temperature
PIPE SUSPENSION
. . . a new science
100 linear feet of steel pipe expands 9.4 inches when heated to 1000° F. When this thermal expansion takes place, the resultant forces induced into the piping system are tremendous.
The practice of using helical coil springs to allow this thermal movement to take place is quite general, but the care that goes into the design or selection of flexible supports is looked upon by many as a casual matter. In fact, many specifications covering the support of important high temperature piping will simply say "spring hangers shall be provided." Merely to contend that this is a dangerous practice is not enough.
Unless careful study is given to the design and selection of spring supports which will maintain a balanced pipe suspension system, the transfer of weight from one hanger to another, or from a hanger to a terminal point, may endanger the safety factor of the entire system.
From a paper presented before the American Petroleum Institute and published in the magazines PETROLEUM PROCESSING and PETROLEUM REFINER.
Literature on the importance of flexible pipe supports and the method of determining supporting forces and also material that is helpful in calculating hanger loads has been recently prepared by Grinnell Company and is available on request.
GRINNELL CONSTANT-SUPPORT HANGERS
Provide constant support to piping subject to vertical movement. Full safety factor of supported system is always maintained.
GRINNELL PRE-ENGINEERED SPRING HANGERS
Permit thermal movement of piping. Patented precompression feature assures operation of spring within its proper working range where variation in supporting force is at a minimum.

A TYPICAL EXAMPLE OF GRINNELL PIPING SERVICE

COMPLETE . . . EVERYWHERE

Products Manufactured
Pipe and Tube Fittings
Engineered Pipe Hangers
Prefabricated Piping
Grinnell-Saunders Diaphragm Valves
Thermolier Unit Heaters
Job Work Casting
Automatic Sprinklers and Special Hazard Fire Protection System
Amco Humidification and Cooling Systems
Other Piping Specialties

Supplier of . . .
Pipe, Valves and Fittings
Specialties for Plumbing, Heating, Water Works and General Piping

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WHENEVER **PIPING** IS INVOLVED

PERSONALITIES *in the* NEWS

A. Baird Harris, Jr. has been named as Purchasing Agent of the Anaconda Copper Mining Company, New York, N. Y. to succeed E. E. Littler who retired from

A. Baird Harris, Jr.

the post last month after forty eight and one half years' service with the company. Mr. Littler had been Purchasing Agent since 1925. Before World War II, Mr. Baird was Purchasing Agent for the International Business Machines Co. He served three years in the army, attaining the rank of lieutenant colonel, and for the past two and one half years has been Assistant Purchasing Agent for Anaconda.

E. T. Adams has been made Director of Purchases of Kerotest Manufacturing Co., Pittsburgh, Pa., according to an announcement by Stanley J. Roush, executive vice-president. Mr. Adams has been foreign representative for Kerotest and for 12 years had been Purchasing Agent of the Sinclair Oil Co. in Mexico. Prior to that time, he had been in the material department of the Standard Oil Co. of Venezuela.

Earl L. McCall has been appointed Purchasing Agent of the Pacific Electric Railway, Los Angeles, Calif., to succeed the late Clifford Thorburn. Mr. McCall began his railroad career with the line in 1912, and has worked his way from counter boy through various purchasing department positions.

H. L. Dingler has succeeded C. O. Miller as Director of the Purchasing and Salvage section of the manufacturing staff of General Motors Corp., Detroit, Mich. Mr. Miller left the position to handle a special assignment. Mr. Dingler was formerly director of the industrial engineering section.

Theodore F. Nessler has been appointed to the newly created position of Purchasing Manager for the Chemical Department of the General Electric Company, Pittsfield, Mass., according to an announcement by Dr. Zay Jeffries, vice-president and general manager, with the concurrence of Harry L. Erlicher, vice-president in charge of purchasing for the company. For the past eight years Mr. Nessler has been in charge of purchasing of chemicals, castings, factory and foundry supplies for the company.

An employee of General Electric since 1907 when he started his career as a messenger boy, Mr. Nessler has always been a member of the Purchasing Department. Following World War I during which he served with the army in France, he served as assistant buyer of electrical supplies, lumber and materials for the company's operations in the radio

Theodore F. Nessler

industry. Since then he has had experience in all other main divisions of the Purchasing Department. For the time being he will make his headquarters in Schenectady, N. Y.

Ed. N. Foster has been appointed division Purchasing Agent of the Houston, Tex. division of Gulf Oil Corp. and Gulf Refining Co. Mr. Foster, who has been with Gulf for 29 years, and who was formerly assistant division Purchasing Agent, succeeds the late Linn S. Cooper, Sr. Kenneth R. Woodham, assistant general storekeeper, succeeds Mr. Foster as assistant Purchasing Agent. J. A. Berwick, chief clerk of the purchasing office, has also been appointed an assistant division Purchasing Agent.

Seth Wiley has been appointed Purchasing Agent for the Lyon-Raymond Corp., Greene, N. Y.

George A. Hildenberger, Assistant Purchasing Agent, Bethlehem Steel Co., Bethlehem, Pa., recently retired after 47 years of service with the company. He

George A. Hildenberger

entered the employ of Bethlehem Steel in September, 1900 as an order clerk. After a number of advancements he was made assistant to the Purchasing Agent in 1928, and in 1937 was promoted to his latest position. In recognition of his long and faithful service, the members of the purchasing department presented Mr. Hildenberger with a radio-phonograph. Twenty-four of his associates tendered him a farewell dinner at the Bethlehem Club. Mr. Hildenberger is a past president and past national director of the Purchasing Agents of the Lehigh Valley.

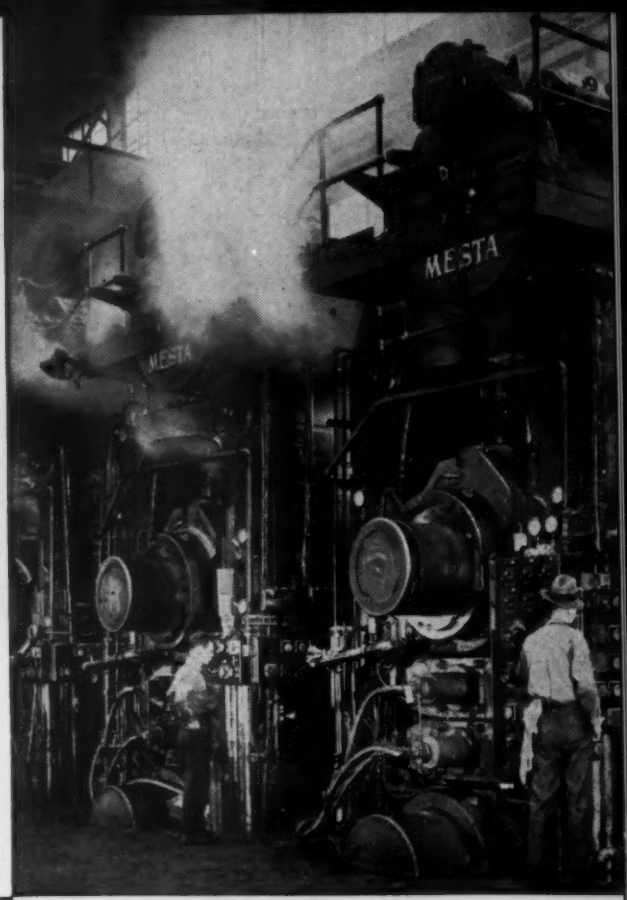
William J. James, Purchasing Agent for the Phelps Dodge Copper Products Corporation, Elizabeth, N. J., has retired after 39 years' service in that position. He had been with the company for 41 years, starting with the old Waclark Wire Company, and playing progressively important roles in the management of its plant through changes in control and name of the plant.

A group of the older members of the Purchasing Agents Association of New York tendered a testimonial dinner to Mr. James, a member of the group for 33 years, at the Downtown Athletic Club, New York, on January 28. His service to the association has been generous and extensive, and he held the posts of president and national director, and other positions. He was also honored at reception tendered by 170 of the office personnel of his plant.

(*Please turn to page* 284)

SUNVIS "900" OILS . . for the toughest lubrication jobs

Sunvis "900" oils are in use today in turbines, circulating systems, hydraulic systems, textile machinery and in many other types of application.



Two years ago, we introduced our Sunvis 900 Oils, Sun's premium grade for industrial use. Since then, Sunvis 900 Oils have been proving their ability to resist oxidation and sludging under the most rigorous operating conditions. They stand up for long periods of continued use at extremely high temperatures without appreciable change in physical characteristics, body, color or "neut number." Sunvis 900 Oils possess a high viscosity index and in addition have the unusually low pour-point of 0°F.

Wherever continued operations, high speeds, heavy loads and extremes of temperature combine to threaten your equipment investment . . . wherever lubrication problems are really *tough*—rely on Sunvis 900 Oils. There are distinct grades specially created to meet the requirements of each kind of application. All are fortified against the formation of harmful oxidation products, sludge and rust.

Sunvis 900 Oils assure you of economies through longer equipment life, continuous operations for longer periods between oil changes, less frequent "down time" for inspection and repairs.

For details write to the Industrial Advertising Department for Sunvis 900 booklet.

SUNOCO

SUN OIL COMPANY

Philadelphia 3, Pa.

In Canada: Sun Oil Company, Ltd., Toronto and Montreal

J. W. Snowden has been appointed Purchasing Agent of the Los Angeles Chamber of Commerce. He was formerly a purchasing official for the Douglas Aircraft Co., and succeeds Ray Diekemper who has resigned. Mr. Snowden was assistant manager in charge of purchasing at the Auditorium hotel in Cleveland, O. before coming to California in 1943. His

J. W. Snowden

experience with Douglas took him to Gura, Eritrea, where during the early war years he purchased housing and commissary supplies. He was head of the office of tooling material procurement at the Douglas plant in Long Beach, Calif. for more than two years.

Lee F. Nichols has been named Purchasing Agent of the Waterbury, Conn. Hospital. A graduate of Albion College, Albion, Mich., Mr. Nichols was formerly Purchasing Agent at the Hartford Hospital for two years.

Francis A. Wandell, Purchasing Agent for E. R. Squibb & Sons, New York, N. Y., was a featured speaker at the recent meeting of the American Pharmaceutical Manufacturers Association in New York. Mr. Wandell warned his listeners that purchasing methods based on past experiences will not meet the problems of the coming year.

R. Park Lamborn has been promoted to the position of General Purchasing Agent for the Kennecott Copper Company, with offices in New York City. Mr. Lamborn entered the copper industry in 1910, in the mining operations of the Nevada Consolidated Copper Company. When that company merged with the Utah Copper Company in 1920, he was assigned to the purchasing department in Salt Lake City. Ten years later, another merger brought the company into the Kennecott organization, and he was named Assistant General Purchasing Agent at San Francisco. He was transferred to the New York office in a similar capacity in 1934. Mr. Lamborn is a past president of the Utah Purchasing Agents Association, and still holds an honorary membership in that organization. He was an active member of the Northern California Association from 1930 to 1934, and for the past fourteen years has been affiliated with the New York Association, serving on a number of important committees in that group.

Leonard W. Shelton, who for the past 25 years has been Superintendent of Supplies for the Braden Copper Company, Kennecott's mining operation in Chile, has been named Assistant General Purchasing Agent of the Kennecott Copper Company at New York.

William C. Collins, Purchasing Director of the Detroit, Mich., Board of Education, was honored recently by his associates on his 35th anniversary on the job. Mr. Collins was presented with a watch at an informal luncheon. After joining the board's supply department, Mr. Collins drove a team of horses, delivering to the schools. Since 1917 he has done all the buying for Detroit's 260 schools and Wayne University. His purchases have ranged from three dollars for a medical school cadaver to $600,000 a year for milk, and he estimates that each year he has to sign more than 40,000 purchase orders.

John A. Roche, Purchasing Agent for the Eastern Gas & Fuel Associates, Boston, Mass., was honored recently on the 45th anniversary of his service with the company. His fellow employees presented him with a sterling tea service at a testimonial luncheon.

Carl Peterson has succeeded George C. Bestick as Purchasing Agent of the Heald Machine Co., Worcester, Mass. Mr. Bestick retired after 35 years' service with the company and purchased the Elwood Adams, Inc., Worcester, hardware, mill and industrial supply business. Mr. Peterson has been with the company for 25 years, and was formerly Assistant Purchasing Agent.

John Crawford, Purchasing Agent of the Sun Life Assurance Co. of Canada, Montreal, spoke recently to a meeting of the Boston, Mass. chapter of the National Office Management Association on the subject, "Office Management Looks Up". Mr. Crawford, is a past president of the N.O.M.A., a past president of the Purchasing Agents Association of Montreal and is currently a member of the Canadian Council of Purchasing Agents.

William G. Lewis has been appointed Commissioner of Purchases and Supplies for the city of Detroit, Mich., by Mayor Eugene L. Van Antwerp. Mr. Lewis served as a commissioner of the Michigan Liquor Control Commission, was at one time secretary of the Michigan Public Service Commission and during the war was district-board-operation executive of the O.P.A.

A. J. Joyce is the new Purchasing Agent for the Houston, Tex. plant of the A. O. Smith Corp., he was formerly Purchasing Agent of Ebasco Services, Inc.

J. J. Rybak has been named Purchasing Agent at the Fairmount Tool & Forging Co., Cleveland, O.

Charles F. Conley has been appointed Assistant Purchasing Agent at the Standard Oil Co., Cleveland, O. Previously he had been doing buying and expediting.

Arthur G. Hopcraft, Director of Purchases, Cleveland Worm & Gear Corp., Cleveland, O., discussed purchasing principles and practices before 1,000 members of the annual production conference of the American Management Association in New York recently. During the discussion he presented a "Code of Buymanship".

John F. Duffy, Assistant to the Purchasing Agent at Erie Railroad headquarters, Cleveland, O. since 1939, has been promoted to assistant manager of stores for the railroad. He has been with the road for 33 years.

A. C. Bull, formerly General Purchasing Engineer for the Public Utility Engineering & Service Corporation, is now vice-president of the Pioneer Service & Engineering Co., Chicago, Ill. The Pioneer Service & Engineering Co. acquired the business and personnel of the Public Utility Engineering and Service Corporation recently.

Ned Sebring has been appointed Director of Purchasing of Redmond Co., Inc., Owosso, Mich. Mr. Sebring joined the company in 1932 and served during the ensuing years as supervisor in the shipping, receiving, stock, material control

Ned Sebring

and planning departments. In 1939 he was named assistant to the Director of Purchasing and held the position until his latest appointment. He replaces Ralph Redmond, who was recently named director of sales.

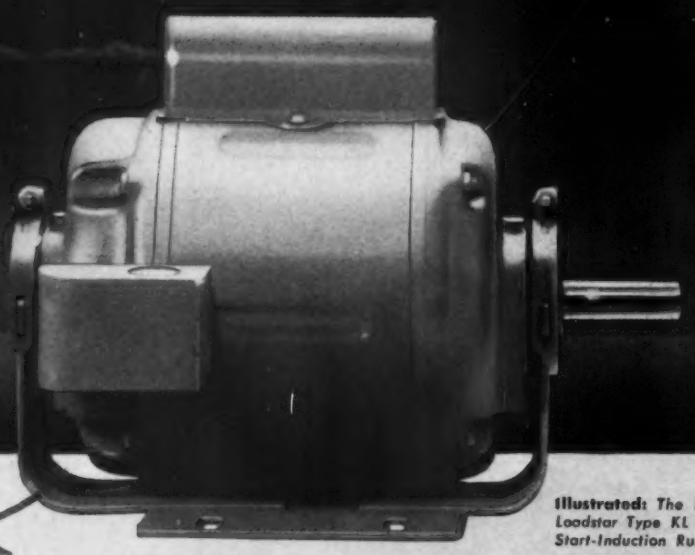
R. D. Johns is the General Purchasing Agent for the Superior Coach Corp., Lima, O. under a new organizational structure adopted at a recent reorganization meeting of the company.

Earl Cobden, of Hughes Tool Co.; Tom Coatney of Frederick Post Co., and Marshall Peters of Humble Oil & Refining Co., all members of the Houston Association of Purchasing Agents, were honored recently with life memberships in the Houston Chamber of Commerce in recognition of their obtaining 100 or more members for the chamber.

Leo A. Murray has been chosen by Mayor Martin H. Kennelly to become Purchasing Agent of the city of Chicago, Ill., heading the recently established central buying bureau. Mr. Murray has retired from the purchasing department of the Western Electric Company's Hawthorne Works to take the new position. John F. Ward has been made Assistant Purchasing Agent for the city.

(*Please turn to page* 290)

Set your Sales by the Leland LOADSTAR



Illustrated: *The Leland Loadstar Type KL Capacitor Start-Induction Run Motor*

COOL-RUNNING! *Internal fan air-cooling, and newly developed ventilation features.*

QUIET! *Exceptionally close tolerances eliminate vibration, prolong motor life. Engineered throughout for smooth, silent operation under most exacting conditions.*

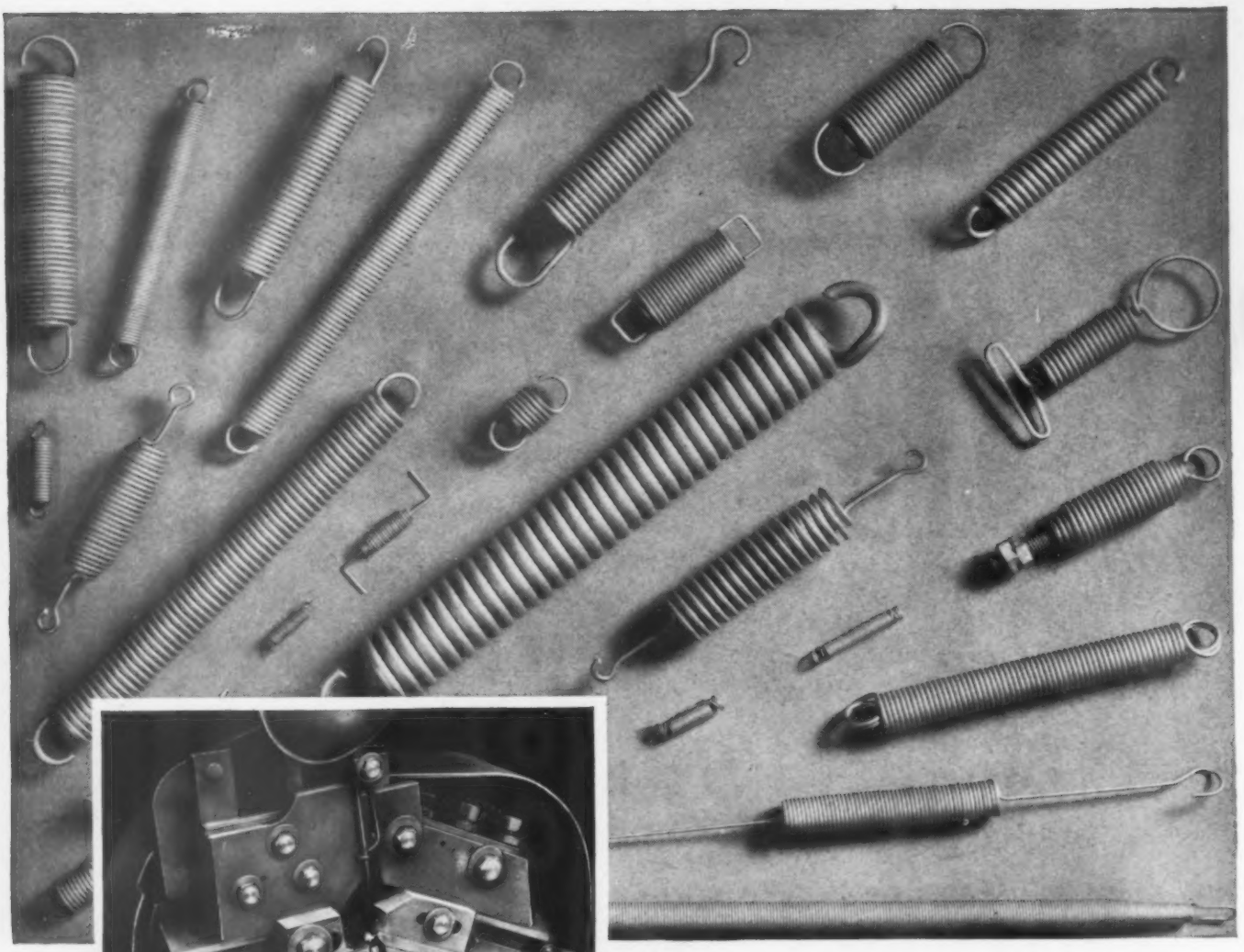
SELECTION! *1/6 to 3 HP. Types—ball bearing and sleeve bearing; open and enclosed; horizontal and vertical. Thermomatic control optional. Special-purpose motors built to specifications.*

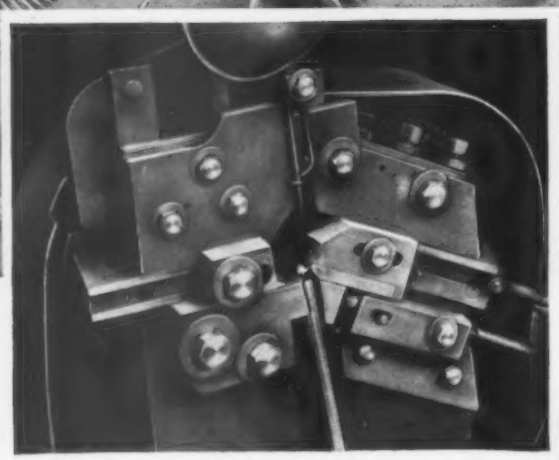
LOADSTAR-POWERED, your product will encounter smoother sailing at the point of sale. However high your production and performance standards—you'll find the self-same qualities in Leland Loadstars. Thus, the Leland nameplate—on hushed, sweet-running, cooler motors—becomes an important factor in the service of your product and in the satisfaction it is built to render. Specify Leland Loadstars for HP per cubic inch as high as any —for HP per pound higher than most. *Write for complete descriptive folder.*

THE LELAND ELECTRIC COMPANY, DAYTON 1, OHIO. ***Branches in all principal cities.***

LELAND LOADSTAR MOTORS

MOTORS OF ALL TYPES—ENGINEERED TO INDUSTRY'S SPECIFIC NEEDS





WELL BENT FOR DEFLECTION!

THE DIMENSIONS of a spring must meet the load and deflection requirements of the spring installation. And, in extension springs, the type and position of hooks and loops have a definite bearing on the design since provision must be made for the stress concentration caused by bending.

Our files are full of examples in which consultation with Wickwire's skilled designers, metallurgists and toolmakers has saved our customers time, trouble and expense. In some instances they have suggested the use of machine-made loop ends which are generally less costly than hand-jigged special hooks. In other cases the use of special hooks has effected a saving by eliminating extra parts and assembly time.

Our spring and formed wire specialists, many of whom have been with us for over 25 years, have engineered well over 50,000 different spring designs. Why not avail yourself of their services? Also, let us send you our free book, "Springs and Formed Wires." It's full of valuable engineering data about spring selection and performance. Just address your request to Spring Dept., The Wickwire Spencer Steel Div. of C. F. & I., 2 New Bond St., Worcester 6, Mass.

CF&I WICKWIRE SPENCER SPRINGS

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

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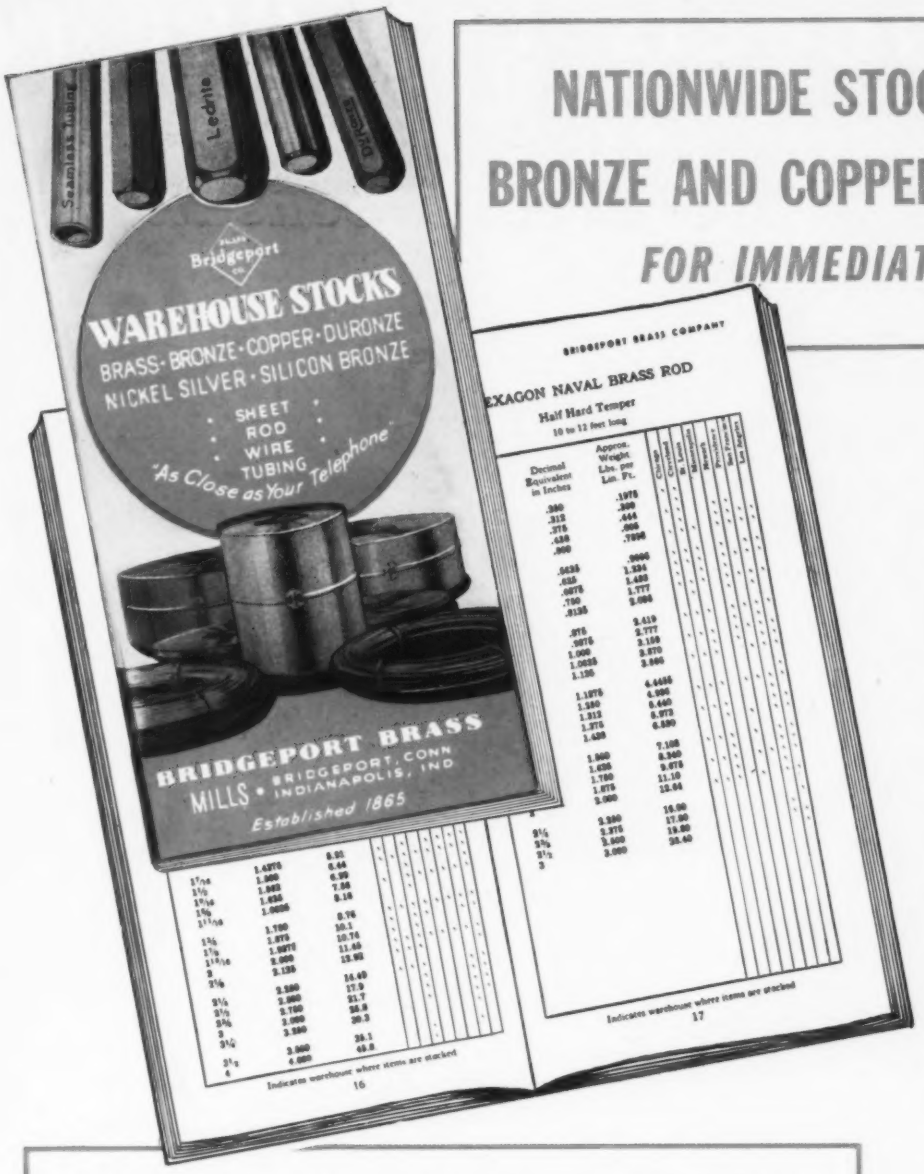
Other quality Wickwire Spencer Products include: Wire, Wire Rope, Metal Conveyor Belts, Chain Link Fence, Industrial Wire Cloth, Poultry Netting, Hardware Cloth, Insect Wire Screening, Welded Wire Fabric for concrete reinforcement.

NATIONWIDE STOCKS OF BRASS, BRONZE AND COPPER MILL PRODUCTS

FOR IMMEDIATE DELIVERY



Write the nearest Bridgeport Office for your FREE *copy of this* New Warehouse Stock List *for every user of brass mill products*

This new BRIDGEPORT BRASS Warehouse Stock Manual shows at a glance all materials carried for customer convenience and **quick delivery—at each of the Bridgeport warehouses throughout the country.**

It lists every type of alloy . . . in sheet, strip, rod, wire and tube form that Bridgeport stocks in the warehouse nearest you!

Thus with this manual, you have always available a ready reference to stocks that are on hand for prompt or rush delivery in limited quantities to your plant while you are awaiting mill shipments from our Bridgeport or Indianapolis mills.

Bridgeport's new warehouse stock list, just off the press, carries a wealth of technical information as well as convenient tables of weights, temperatures, gauges, measures, etc.

To get your copy simply address your request on your business letterhead to the Bridgeport Brass Company office *nearest* you.

Call Your Local Office for Warehouse Service

Warehouse and Jobber Stocks Available for Prompt Delivery

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Atlanta 3, Georgia...701 Volunteer Building
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★ Cleveland 6, Ohio .....1921 E. 119th Street
★ Denver 2, Colorado .....1962 Blake Street
Detroit 26, Michigan.....2328 Buhl Bldg.
Grand Rapids 2, Mich..510 Assoc. Com. Bldg.
★ Houston 1, Texas.....2216 Walker Avenue
Indianapolis 4, Indiana..Circle Tower Bldg.
Jacksonville, Florida, 5133 Appleton Avenue
★ Los Angeles 12, California, 130 S. Hewitt St.
Milwaukee 2, Wisconsin, 715 N. Van Buren St.
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Philadelphia 3, Penn. ...Broad St. Sta. Bldg.
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★ Providence 3, Rhode Island...60 Clifford St.
Rochester, New York, 816 Reynolds Arc. Bldg.
★ St. Louis 3, Missouri.....2135 Delmar blvd.
St. Paul 5, Minnesota...703 Ashland Avenue
★ San Francisco 3, California...1155 Bryant St.
Washington 5, D. C..616 Southern Building

BRIDGEPORT BRASS COMPANY, Bridgeport 2, Conn. • *Established 1865*

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana. In Canada—Noranda Copper and Brass Limited, Montreal

"Bridgeport"

Brass-Bronze-Copper-Duronze

STRIP ROD WIRE TUBING

BRIDGEPORT BRASS

These Wheels Can Really

They're Made of the Sensational

32 ALUNDUM abrasive is entirely different from any other abrasive — made differently by a unique Norton-developed process. *There's no crushing to size* — each grain forms in the electric furnace as a single, complete, multi-pointed crystal. The result is a wheel that's *sharper* — that cuts faster and cooler.

And the grains of 32 ALUNDUM abrasive are over 99% pure fused alumina — no non-cutting slag nor pores. This means *greater resistance to dulling* — fewer dressings, longer wheel life.

The Greatest Cost-cutting Development in Abrasives in Over Forty Years

Cut Your Grinding Costs!

32 ALUNDUM®

For Faster Cutting

For Cooler Cutting

For Fewer Dressings

For Longer Wheel Life

The cost-cutting ability of 32 ALUNDUM grinding wheels has now been definitely proved — by over a year of steadily increasing use in thousands of plants. *They can cut costs for you, too.* Try them for cylindrical, centerless, surface, gear, tool and internal grinding. Ask your Norton abrasive engineer or Norton distributor for specific recommendations.

NORTON COMPANY, WORCESTER 6, MASS.

Distributors in All Principal Cities

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NORTON ABRASIVES

Found in the BEST PRODUCTS

• Any product is only as good as its fastenings. The best-made machines and equipment always employ fastenings that are as capable and efficient as the products of which they are a vital part.

Chicago "Safety Plus" Socket Head Screws are used in many of the finest screw-fastened products manufactured today. They improve these products by providing the greatest fastening strength with the least possible weight.

"Safety Plus" fastenings are made of the highest quality materials and manufactured under the most modern processes. They are close-tolerance tested throughout every step of production to assure absolute perfection in thread and dimension. You'll find them superior in every way for your product.

1872 1947

CHICAGO *"Safety Plus"* line includes:

Socket Head Cap Screws
Socket Set Screws
Stripper Bolts
Square Head Dog Point Set Screws
Socket Pipe Plugs
Keys for "Safety Plus" Products

•

Complete line includes:

Hexagon Head Cap Screws
Square Head Cup Point Set Screws
Headless Set Screws
Fillister Head Cap Screws
Flat Head Cap Screws
Taper Pins
Milled Studs
Semi-Finished Hexagon Nuts
Semi-Finished Hexagon Castellated Nuts

These Fine Products are sold only thru Authorized Distributors

THE CHICAGO SCREW CO.
ESTABLISHED 1872
1026 SO. HOMAN AVENUE CHICAGO 24, ILL.

(*Continued from page* 284)

J. H. Thiesmeier, Jr., has succeeded William M. Smith as Purchasing Agent, general storekeeper, and superintendent of the lost property department of the Hudson & Manhattan Railroad Co., New York, N. Y.

A. R. Tomson, Purchasing Agent for the Blatz Brewing Co., Milwaukee, Wis., has been appointed to a new editorial advisory group established recently by the Elks Magazine.

PRESIDENT CONFERS MEDAL OF MERIT ON CLIFTON E. MACK

President Truman has conferred on Clifton E. Mack, Director of the Treasury's Bureau of Federal Supply, the Medal of Merit for exceptional service to the Government during the war.

Presentation of the award was made recently in a surprise ceremony at the Bureau of Federal Supply Offices by Edward H. Foley, Jr., Assistant Secretary of the Treasury.

Clifton E. Mack

Crediting Mr. Mack with "aggressive leadership" in directing procurement activities of vitally needed goods, the citation said that Mr. Mack's efforts were responsible for rushing much needed items to our allies during the war.

The Bureau, under Mr. Mack's direction, became one of the major purchasing organizations in the war structure, buying nearly 8 billion dollars worth of chemicals, metals, vehicles and nearly 50,000 other items. Included in the vast operation were purchases of such things as aluminum rolling mills, entire railroads, a tire manufacturing plant, refining equipment and many others.

During the war, Mr. Mack was named by former Secretary Henry Morgenthau, Jr., to be the Treasury Member of the Procurement Policy Committee which, under the chairmanship of Donald M. Nelson, advised the President on purchase policies.

In addition, Mr. Mack was instrumental in calling into the Federal service outstanding industrial purchasing agents to help the mammoth procurement program then under way.

A career civil servant, Mr. Mack entered the Government in 1927 as a member of the Treasury's Intelligence Unit, Bureau of Internal Revenue. He rose rapidly to the post of Special Agent in Charge of the New England Division. In 1940 he conducted a special survey of the Procurement Division's purchas-

(*Please turn to page* 292)

BEAT THE STEEL SHORTAGE

-use Steel that DOES more!

By replacing carbon steel with U·S·S COR-TEN or U·S·S MAN-TEN where economically applicable, you can:—

1. Make your steel supply go one-third farther, NOW.

By taking advantage of the higher physical properties of these steels you can use thinner sections to produce units that weigh one-fourth less—that are substantially stronger and more durable—that require one-fourth less steel per unit. As a result you can produce as much as one-third more units from every ton of steel used.

2. Make better products—lighter, long lasting and generally more profitable to the user, NOW.

In addition to saving steel, lightweight construction with steel that *does* more has other proved economic advantages. Every pound of weight saved pays off in reduced operating costs, increased capacity to do work, and lower maintenance expense. These steels, by saving weight, make equipment more efficient—more productive.

3. Satisfy more customers, NOW.

The one-third *additional* units you can turn out, —without using more steel—mean that you can serve more customers, create more good will, and make more money because you have more units to sell. And you can do this NOW—without waiting for the completion of new steel making facilities.

4. Get these benefits at little or no greater cost per unit than NOW.

Because both U·S·S COR-TEN and U·S·S MAN-TEN, like plain carbon steel, can be readily fabricated—because one fourth less steel is required per unit, with consequent reduction in shipping costs—because fixed charges can be spread over one-third more units—your finished product can be built at little or no increase in cost. Frequently, as in the case of freight cars, mine cars, trucks and trailers, it may actually cost less per ton of capacity.

TO HELP YOU *adapt these steels to your product* immediately—*and with least change in your shop methods—we have a special metallurgical and engineering staff thoroughly familiar with what these steels can do. Phone, wire or write.*

U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S ABRASION-RESISTING · U·S·S MANGANESE-NICKEL-COPPER

USS HIGH STRENGTH STEEL UNITED STATES STEEL

8-309

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast · UNITED STATES STEEL EXPORT COMPANY, New York

Users Save $10.08 per Wheel or Caster with

AEROL EQUIPMENT

High Performance Low Maintenance

Corrosion-resistant, spark-proof Aerol Aluminum Alloy Wheels have heavy-duty, solid rubber tires.

Silent, smooth-rolling Aerol Aluminum Alloy Casters are available in swivel or rigid type.

The average wheel or caster needs lubrication every month of its estimated six-year operating life, at a cost to the user of $10.08. Aerol Wheels and Casters are furnished exclusively with high precision Timken Tapered Roller Bearings that are factory-lubricated and sealed for their normal life. Think what this means in terms of four-wheel equipment—*Aerol not only saves you maintenance costs, but gives you advanced design and easier operation as well*

IMPORTANT NOTICE!

If any of your Aerol Materials Handling Equipment ever needs replacing, merely ship it to us and we'll replace it at one-half the current list price.

Immediate Delivery!

AEROL CO.

MODERN MATERIALS HANDLING EQUIPMENT
1823 E. WASHINGTON BLVD. • LOS ANGELES 21, CALIF.
All-aluminum wheels . . . rubber-tired wheels
pneumatic wheels . . . rigid casters . . . swivel casters
all-aluminum Universal hand trucks

AVAILABLE PRESS CAPACITY

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20 TO 90 TONS
10 FT. PRESS BRAKE
10 FT. SHEAR

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Welding Plating
Assembly
Hot Dip Galvanizing
Modern Tool Room

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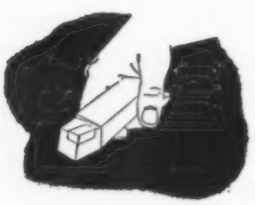
INQUIRIES SOLICITED

Write BOX 314
BIRMINGHAM,
ALABAMA



KENNAMETAL
CEMENTED CARBIDE
TOOLS, BLANKS, and SPECIALTIES

- FOR FAST, ACCURATE METAL-CUTTING . . . complete selection of single-point tools and milling cutters.
- RESIDENT TOOL ENGINEERS in 24 cities available for expert help in proper selection and correct use.
- WAREHOUSES in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.

KENNAMETAL
SUPERIOR CEMENTED CARBIDES
KENNAMETAL Inc., LATROBE, PA.

(*Continued from page 290*)

ing activities and then became Director of the organization.

A combat pilot in the First World War, Mr. Mack is also a graduate of the Suffolk Law School in Boston, Massachusetts. He is responsible for the national supply system now operating within Government, whereby civilian agencies of the Federal establishment are supplied with items they commonly use from 12 strategically placed Treasury warehouses.

Mr. Mack is a member of the National Association of Purchasing Agents and a past President of the Washington Chapter of that organization. He more recently has, in conjunction with the National Institute of Governmental Purchasing, laid plans for a National Academy of Public Purchasing, the first sessions of which will begin shortly and which will disseminate uniform purchasing information to officials in States, Counties and Municipalities.

AMONG THE COMPANIES YOU BUY FROM

New York, N. Y.—Jenkins Bros. Robert V. Salisbury has been named manager of the New York branch of the valve concern. Mr. Salisbury, who will have his

Robert V. Salisbury

headquarters at the company's offices at 80 White St., was assistant to the general sales manager in New York prior to his new appointment.

Chicago, Ill.—A. O. Smith Corp. Alfred D. Pool has been appointed manager of electric motor sales in the midwest and east, with headquarters in the company's district office here.

Pittsburgh, Pa. — Raybestos-Manhattan Inc., Manhattan Rubber Division. P. L. Edwards has been named as assistant manager of the company's central district office here.

Chicago, Ill.—J. W. Greer Co. A new general sales office has been opened at 33 North LaSalle St., and will be managed by Don S. Greer, vice-president in charge of sales. The company manufactures multi-tier conveyors.

(*Please turn to page 294*)

VULCANIZED FIBRE

VULCOID

The right material for your job . . . right at your fingertips!

DILECTO

CELORON

MICABOND

How C-D Engineering Service Gives You *Unbiased* Recommendations That Help Solve Your Electrical Insulating Problems:

Let's suppose you have an electrical insulating problem that involves "tricky" selection of an insulating material. To whom would you rather go for specification help—the manufacturer of one, two, or three materials—or the manufacturer who specializes in *all* types of these products?

Chances are, for an *unbiased* recommendation, you would rely on the latter—the manufacturer who "has no axe to grind"—who offers a complete range of products with the required physicals to meet your needs. That's why you can always depend on Continental-Diamond engineering service. Your insulating job is *different*—and it is treated individually at C-D. You'll find five different insulating materials subdivided into grades or combinations of grades to fit your most exacting job. You'll also find trained technicians ready to work with you on any of your problems.

Take advantage of this time-saving, one-stop source for all your electrical insulating needs. Just contact your nearest C-D office, and an able technician will give you all the information you want—quickly, and accurately. Call or write, now.

DE-1-48

BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES
WEST COAST REPRESENTATIVE: MARWOOD LTD., SAN FRANCISCO 3 • IN CANADA: DIAMOND STATE FIBRE CO., OF CANADA, LTD., TORONTO 8

Continental-Diamond FIBRE COMPANY

Established 1895 . . Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE

NON-CORRODING "ALLENS" for applications where steel is subject to excessive moisture, chemical fumes or corrosive vapors. Made of "18-8 Type" *Stainless,* non-heat treated, non-magnetic. Set screws: stock sizes #6 to ½" diameter; cap screws: #8 to ½". N.C. threads only. Class 3 fit; Allen precision fastenings. . . Order of your local Allen Distributor, or write us for samples and literature.

THE ALLEN MFG. COMPANY
HARTFORD 2, CONNECTICUT, U.S.A.

Detroit, Mich.—Carboloy Company, Inc. K. R. Beardslee, formerly vice-president in charge of sales, becomes vice-president and marketing manager, in an expansion and streamlining of the company's marketing organization. All sales will be directed by J. E. Welte, who has been named sales manager.

Detroit, Mich.—The Frink Corporation. G. R. Clover has been named sales representative, with headquarters at 629 New Center Building. He was formerly Detroit manager for the General Electric Vapor Lamp Co.

Schenectady, N. Y.—General Electric Co., Apparatus Department. E. A. Green has been named manager of sales of the control divisions.

Detroit, Mich.—John A. Roebling's Sons Co. L. H. Van Dike, Jr. has succeeded

L. H. Van Dike, Jr.

the late Harry T. Hirbe as representative.

Stamford, Conn.—Yale & Towne Manufacturing Co. Philip A. Snyder has been

Philip A. Snyder

appointed general manager of the new specialties division.

Atlanta, Ga.—Market Forge Co. Claude C. Mason & Co. has been designated regional factory sales representative for the southeastern states for the company's line of standardized materials handling equipment.

Chicago, Ill.—Hobart Brothers. Harry K. Miller, company representative, has moved to a new location at 7426 South Halstad Street.

Denver, Colo.—Brown Instrument Co. The company has established permanent sales and service representation at 410 Broadway, with Donald Larcen in charge. Areas covered will include all Colorado, Wyoming and western Nebraska.

Boston, Mass.—General Electric Co., Lamp Department. C. M. Snyder has become manager of the New England

C. M. Snyder

sales district office, succeeding C. C. Walker, who has been made a commercial vice-president of the General Electric Co. in Boston.

Cincinnati, O.—Monsanto Chemical Co. Tom K. Smith has been named assistant branch manager of the company's phospate division, supervising sales in parts of Kentucky, Ohio, West Virginia, and Indiana.

Cleveland, O.—E. W. Bliss Co., manufacturers of metal stamping presses, has transferred its sales office from the N.B.C. Building to the company's manufacturing plant on E. 222nd St., Euclid, Cleveland.

New York, N. Y.—Kennametal, Inc. has opened an eastern district office at 6 West Broadway, for the distribution and servicing of the company's cutting tools and wear-resistant parts in eastern New York and northern New Jersey. The new office is in charge of L. D. Morton as eastern district manager, and J. G. Brady will serve as representative.

New York, N. Y.—United States Rubber Co., Wire and Cable Department. Frederick P. Combier has been named manager of branch sales.

Philadelphia, Pa.—The Carpenter Steel Co. Norman C. Einwechter, assistant to the vice-president, will be in charge of the Philadelphia-Reading sales territory.

Chicago, Ill.—Joseph T. Ryerson & Son, Inc. Alfred J. Olson has succeeded

Alfred J. Olson

Ray C. Page as an assistant sales manager of the company's Chicago plant.

(*Please turn to page* 298)

YOU CAN PLACE COMPLETE CONFIDENCE IN THIS MARK OF LADISH

Controlled Quality

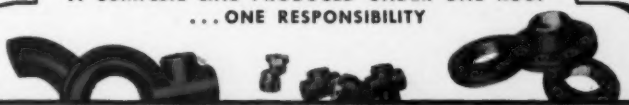
It is the mark of a 45-year-old organization of forging craftsmen . . . and visible evidence of the Ladish pledge that every fitting so marked is a product of unsurpassed metallurgical, engineering and manufacturing controls, rigidly enforced to assure dependability and long, economical piping service. It means *quality* that merits your complete confidence.

TO MARK PROGRESS

THIS PLANT IS HERE TO SERVE YOU

Covering over 800,000 square feet under one roof, the Ladish plant with modern facilities for straight-line production, uncompromising quality controls and orderly warehousing of huge stocks makes possible the Ladish high standard of *quality* and *service*.

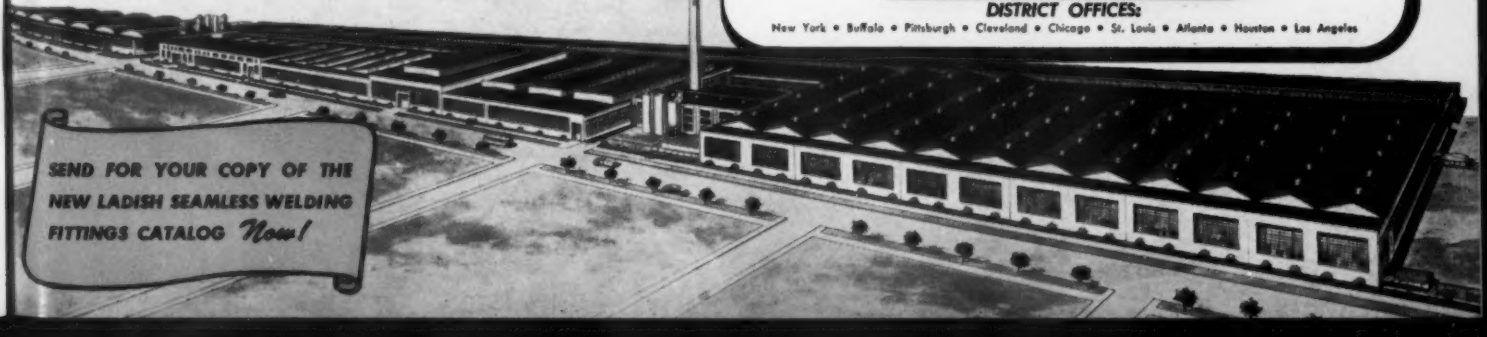
A COMPLETE LINE PRODUCED UNDER ONE ROOF
... ONE RESPONSIBILITY



LADISH CO.

CUDAHY, WISCONSIN
MILWAUKEE SUBURB

DISTRICT OFFICES:
New York • Buffalo • Pittsburgh • Cleveland • Chicago • St. Louis • Atlanta • Houston • Los Angeles



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RELIABILITY

The SUPERSTRONG box or crate you buy today represents the experience and expert craftsmanship gained in nearly a century of better box making.

Many large users of shipping containers are planning with us for their long range requirements. Our engineering department will be glad to tell you how SUPERSTRONGS—"Bound with Steel"—can solve the shipping problems of your future postwar products.

SHIPPING TRADE MARK SUPERSTRONG CONTAINERS REG. U.S. PAT. OFF.

RATHBORNE, HAIR AND RIDGWAY COMPANY

1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Wise Choice

for maximum fastener strength—

CLEVELAND *Top Quality*

High Carbon Heat Treated Cap Screws

made by

DOUBLE EXTRUSION*

(The Kaufman Process)

It's easy to select Cap Screws when you know that *one type,* which costs very little more than the general run, has all the desirable qualities recommended by metallurgists and engineers.

Cleveland High Carbon Heat Treated Cap Screws made by the Kaufman Process—the Double Extrusion method—"come through" with all ten important points that experts look for in correctly made fasteners. These qualities, and the extra toughness and dependability of Clevelands give you full assurance of a wise choice.... The same manufacturing method produces Top Quality *socket head* cap screws—the newest addition to the Cleveland Cap Screw Line.

**Write for folder explaining double extrusion.*

CLEVELAND *Top Quality* **FASTENERS**

The Cleveland Cap Screw Company

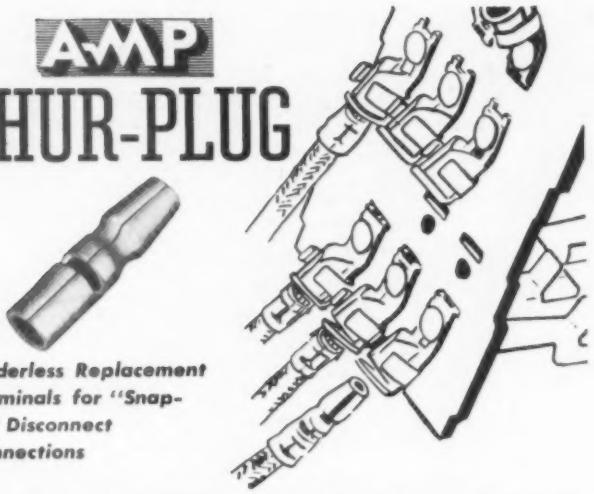
2917 EAST 79TH STREET • CLEVELAND 4, OHIO

Warehouses: Chicago and Philadelphia

Ask your Jobber for Cleveland Fasteners

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

AMP
SHUR-PLUG



Solderless Replacement Terminals for "Snap-In" Disconnect Connections

- **For instrument panel wiring, relays, lights, etc., on cars, trucks and buses.**
- **For automatic controls on washers, ranges, dishwashers, radios, air conditioning units, etc.**
- **For relays, controls, lights, etc., on tractors and other industrial material handling equipment.**

AMP "SHUR-PLUGS" provide easy convenient replacement of "snap-in" terminals without fuss or hazards of soldering. Applied in matter of seconds by AMP hand tools, pneumatic-powered hand tools or foot or power-operated presses using positive, permanent AMP pressure crimp. Superior to soldered connections in strength, conductivity and corrosion resistance.

AMP "SHUR-PLUGS" are available for standard 16-14 stranded wire and are designed to make perfect "snap-in" connections with standard female fittings.

Catalog Section 52 gives you complete details — write today for your copy.

AIRCRAFT-MARINE PRODUCTS Inc.
1319 NORTH FOURTH STREET, HARRISBURG, PA.
Sole Canadian Representative:
F. MANLEY & SONS, LTD., 82 Adelaide St., E., Toronto, Ont., Canada

Fit Speeds to Job Needs *with a* CULLMAN SPEED REDUCER

It's easy to adapt any standard high speed electric motor to slower machine operations by adding a Cullman Speed Reducer. This gives a *new range of low speeds* to match job requirements. Cullman Speed Reducers are made in single and double reduction types for motors from ¼ to 15 h. p. Compact, durable, efficient —Cullman units are equipped with Roller Bearings, Helical Gears, Sprockets and Roller Chains—*all operating in oil*. Convenient motor mountings simplify installation.

Get the facts . . . Write today for full information.

CULLMAN WHEEL COMPANY
1352 P Altgeld Street Chicago 14, Illinois

Cleveland, O.—Udylite Corporation. Galen S. Woodruff has joined the company

Galen S. Woodruff

office here as a sales engineer.

Kansas City, Mo.—The Reliance Electric & Engineering Co. William A. Metcalf has been appointed sales representative in the Kansas City territory. He is associated with Carl P. Lohr Co., Reliance representative in the St. Louis area for 15 years.

Chicago, Ill.—O. Z. Electrical Manufacturing Co., has opened a new office at 20 North Wacker Drive, headed by George Muenow.

New York, N. Y.—Celluplastic Corporation. Jack Lein has become associated in a sales capacity with the New York office of the company.

Seattle, Wash.—Bemis Bro. Bag Co. Elwood M. Proctor has succeeded the late E. J. Gregg as manager of the com-

Elwood M. Proctor

pany's plant here. He previously had been in charge of burlap and open-mesh bag sales, St. Louis general sales office.

Newark, N. J.—Titeflex, Inc. Robert E. Carbah has been named sales manager of a new department for the development and promotion of fire control equipment, including fire resistant fuel lines made from the company's inconel flexible tubing.

San Francisco, Calif.—Davey Compressor Co. Montague-Harris & Co. will handle the company's industrial air compressors in the northern California area. Headquarters are at 1075 Folsom Steet.

Akron, O.—John S. Barnes Corp. B. W. Rogers Co., 850 South High St., has been named sales representative. Barnes manufactures hydraulic structures, controls, and fluid power units.

(*Please turn to page* 300)

a new partner in creating

You Get Finest Prints From Your Dry Diazo Equipment With Helios Papers, Cloths, Film

Exclusive Erasing Feature!

Users of dry diazo positive reproductions frequently make drawing changes on transparent intermediate originals, rather than on original drawings. Such changes are easier and quicker on Helios† transparent prints, made on either of the amazing new K&E products—Helios Tracing Cloth or Helios Albanized* Paper—because you can actually erase image lines from them with an ordinary soft ink or typewriter eraser. No inconvenient, time-wasting eradicating fluids are needed.

A Complete Line!

You can make positive line reproductions—working prints on opaque Helios papers or cloth—directly from original drawings, layouts, letters, documents, forms. Or else you can save your originals and reproduce your positive line working prints directly from positive line intermediate originals, made on Helios transparent papers, cloth or films. These Helios materials are available in rolls or cut sheets and they can be printed and developed in the dry diazo process machine you are now using.

K & E Quality Guaranteed!

More than any other reproduction process for drafting room use, the manufacture of diazo process materials demands, from start to finish, the utmost chemical and technical skill. For this reason, a new K&E plant was established to manufacture all the image-forming components essential to Helios products. Helios Positive Printing, Dry Developing Reproduction Materials are offered to you with the assurance that they conform in every way to K&E standards.

Write to Keuffel & Esser Co., Hoboken, N. J. for samples to test on your own equipment, or ask your nearest K & E Dealer or K & E Branch for a demonstration. Once you've tried Helios, you will agree that it pays to be positive with Helios!

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Drafting, Reproduction, Surveying Equipment and Materials. Slide Rules, Measuring Tapes.

A Metal ROSE

By another name

IN THESE DAYS OF STEEL SHORTAGES

NM

In these days of critical steel shortages many manufacturers are saying: "If there is another rose that would smell as sweet, lead us to it." If you use bright plated metals for decorative or functional use, we offer substitutes for steel base metal . . . and they are AVAILABLE! We refer to such Nickeloid Metals as Chrome or Nickel plated to base metals of zinc, copper, or brass. All are available in sheets, in coils, bright or satin finish; coated one or two sides; in a wide range of gauges, tempers.

Nickeloid Metals using such base metals as zinc, copper, or brass are *time-tried* and *proven.* All are easily workable, and for many applications can be used as a satisfactory alternate for steel — at no extra fabricating cost. Ask our representative to call.

Free New Booklet Tells
USES for NICKELOID METALS

This colorful illustrated booklet tells many of the ingenious ways in which manufacturers are using Nickeloid Metals to improve the appearance and marketability of their products. Write for it on your company letterhead.

50 Years of Pre-plated Metal Leadership

AMERICAN NICKELOID COMPANY

Established 1898

PERU 5, ILLINOIS

Houston, Tex.—E. C. Atkins and Company. Robert M. Gaunt has been appointed representative for the company's

Robert M. Gaunt

line of saws in the territory of southern Texas, New Orleans and Louisiana. He will cover the industrial field, metal, woodworking and saw mill industries.

Carnegie, Pa.—Joseph T. Ryerson & Son, Inc. Edward L. Hallin has been appointed machinery sales representative, and will cover the Buffalo, Pittsburgh, and Cleveland areas.

Davenport, Iowa—Inland Steel Co. The company has opened a district sales of-

John C. Veller

fice in Suite 911 of the Kahl Building, with John C. Veller as district sales manager.

Cleveland, O.—The Lincoln Electric Co. G. E. Tenney has been appointed service manager to direct the policies and operations of a newly expanded service department. For the past 15 years he has been district manager for the Lincoln Chicago office.

Philadelphia, Pa.—The American Pulley Co. Caleb F. Fox III, vice-president, has succeeded Frank E. Brown as head of sales and advertising. Mr. Brown has been elected secretary and treasurer to succeed Gonzalo C. Munoz, retired.

Cincinnati, O.—United Paperboard Co., Inc. Charles H. Plogman has been named sales representative in the Cincinnati area. He was formerly purchasing agent of paper and packaging materials for the Kroger Grocery and Baking Co.

Memphis, Tenn.—Bemis Bro. Bag Company. T. N. Barksdale, until recently in charge of the company's Baltimore sales office, has assumed new sales responsibilities at the Memphis sales division. He has been with the company for over 22 years.

(*Please turn to page* 302)

YOUR *Pipe Cutting* MADE EASIER

RIDGID Cutter rolls right thru any pipe—it's now efficiency-balanced

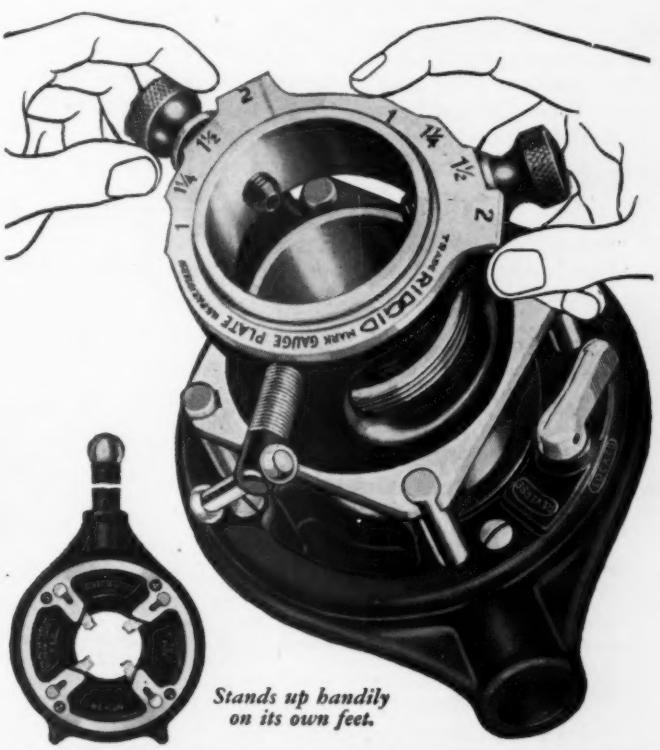
● You find it surprising how much the new balanced malleable frame of this RIDGID takes the work out of pipe cutting, helped by its special tool-steel cutter wheel, factory tested to assure perfect circle cutting. Quick and easy does it, as users world-wide can tell you. Choice of 5 sizes to 6" pipe; 4-wheel cutters to 4." Seeing is believing—ask your Supply House.

4-wheel Nos. 42 & 44 for fast quarter-turn cutting.

Top Speed IN POSTER PIPE THREADING

Extra fast get-ready with this No. 1R RIDGID Threader for 1" to 2" pipe

● If you're partial to poster die stocks . . . here's the one you want. Changing dies is fast as any, but mistake-proof workholder sets faster—only one screw to tighten on pipe, no bushings to monkey with. You'll like the direct-action threading, too—straight line . . . handle to head to dies . . . no wabble. Sets of 4 precision chasers, 1" to 2." Popular price—buy at your Supply House.



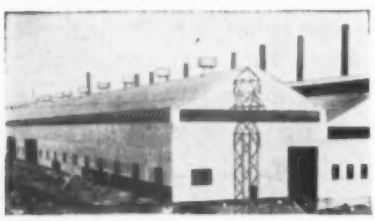
Stands up handily on its own feet.

RIDGID WORK-SAVER PIPE TOOLS

THE RIDGE TOOL COMPANY • ELYRIA, OHIO

TIME
PROVES
Galvanized (ZINC-COATED) Sheets
Stay Stronger Longer

34 YEARS . . . Erected in 1913, and covered with heavy-gauge galvanized sheets, this Tennessee concentrating plant of the A/Z Company, is still in excellent condition after *more than 3 decades of service.* Painted with Gray Metallic Zinc Paint in 1932.



In building for the future, look to the past for proof of a building material's strength . . . durability . . . service. With galvanized (zinc-coated) roofing and siding, you get the strength of steel . . . the rust protection of Zinc. So for low-cost, long-time service, choose the building material that's proved by TIME itself . . . galvanized sheets. Send coupon for information about Zinc and how it can help keep your buildings and equipment stronger longer.

ZINC INSTITUTE 2 OZ. COATING SEAL OF QUALITY

This "Seal of Quality" is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft.

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FREE BOOKLETS!

Send me without cost or obligation the illustrated booklets I have checked.

- ☐ Repair Manual on Galvanized Roofing and Siding
- ☐ Facts about Galvanized Sheets
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces

Name_____

Address_____

Town_____ State_____

Philadelphia, Pa.—Henry Disston & Sons, Inc. J. F. Wilkinson has succeeded George A. Slacke as manager of industrial sales division. Mr. Slacke has

J. F. Wilkinson

retired after twenty-six years' service with the company. Mr. Wilkinson joined Disston in 1937 and was assistant to Mr. Slacke at the time of his new appointment.

Charlotte, N. C.—Berger Manufacturing Division, Republic Steel Corp. Frank J. Grumbach has become district representative. He will handle Berger sales in North and South Carolina, western Tennessee, southern Virginia, Augusta and Savannah, Georgia.

Owosso, Mich.—Redmond Company, Inc. Ralph Redmond, vice-president and treasurer, has been appointed director of sales.

New Bedford, Mass.—Hy-Pro Tool Co. Walter M. Boyden has been named sales manager.

New York, N. Y.—Simmons Machine Tool Corp. Robert L. Devitt has been appointed manager of the New York office, succeeding William Werley who will handle sales in southern territories.

Providence, R. I.—Nicholson File Co. Augustus Vogel, Jr., has been named area manager of the territories repre-

Augustus Vogel, Jr.

sented by Michigan, Indiana, Ohio, Kentucky, and western Pennsylvania. Working with him on sales and service will be John Doran, George Hughes, James Butler and George Hines.

Philadelphia, Pa.—National Electric Coil Co. (Pa.) has moved to Room 710, 1518 Walnut St.

Milwaukee, Wis.—Allis-Chalmers. Harry A. Wright has been named engineer-in-charge of control sales of the control section of the electrical department.

(*Please turn to page* 304)

Where to get
NEW ITEMS— NEW SOURCES OF SUPPLY... quick

A specialized buying directory designed and built for production, purchasing and engineering executives—to assist them, in the easiest manner, to secure sources of supply for all equipment, products or supplies used by industry.

Compact, complete and yet easy to handle—that's PLANT PURCHASING DIRECTORY.

Five separate sections make up this directory—A CLASSIFIED SECTION, containing the names and addresses of manufacturers classified by product—A TRADE NAME SECTION, listing alphabetically the trade name of the product with name and address of the manufacturer—An ADDRESS SECTION, giving the names and addresses of American manufacturers—A CHEMICAL SECTION, listing by product the name and address of important manufacturers—A MECHANICAL DATA SECTION, giving 34 pages of helpful tables, formulas, etc.

Use PLANT PURCHASING DIRECTORY! You'll really like it.

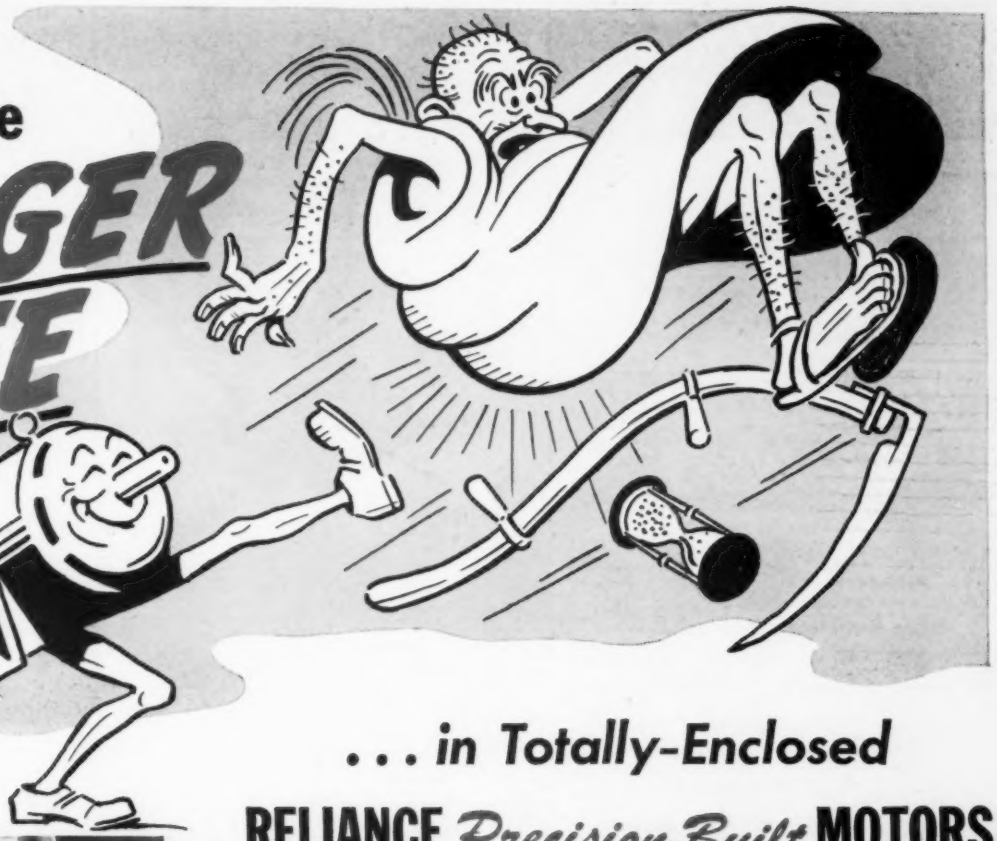
If by chance you haven't a copy, write us. We want every industrial buyer to have the benefits of this handy purchasing reference.

Incidentally, mentioning PLANT PURCHASING DIRECTORY, when sending out inquiries, means much in helping to increase our service to you.

Reach for ➡ *Keep it Handy*

PLANT PURCHASING DIRECTORY
333 N. Michigan Ave., Chicago 1, Ill.
A Conover-Mast Publication

Tough going brings out the LONGER LIFE



. . . in Totally-Enclosed RELIANCE *Precision-Built* MOTORS

Wherever motors operate frequently under abnormal conditions, Totally-Enclosed, Fan-Cooled Reliance A-c. Motors continually amaze users by their longer life. That important extra protection they have—against moisture in the air, against liquids splashed or streamed right on them, against dust and abrasives—pays so much more than it costs!

There's *extra* protection inside, too—to make that longer life of dependable service doubly sure. Ventilation that licks the heat problem is provided by air drawn through end bracket and directed by baffles through streamlined passages.

Thirteen-point winding treatment includes six special steps to assure the most effective insulation possible. And an improved bearing design eliminates all lubrication worries! Write today for Bulletin C-125 (Bulletin C-218 if interested in D-c. motors).

This special bearing design protects Reliance Precision-Built Motors indefinitely!

***Reliance* Totally-Enclosed, Fan-Cooled, Precision-Built Motor.** *For convenience, conduit box of Reliance Motors may be mounted in any of four positions or completely eliminated, as shown here.*

RELIANCE ELECTRIC & ENGINEERING CO.
1056 IVANHOE ROAD • CLEVELAND 10, OHIO

Appleton, Wis. • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Dallas
Denver • Detroit • Gary • Grand Rapids • Greenville, S. C. • Houston • Kansas City
Knoxville • Little Rock • Los Angeles • Milwaukee • Minneapolis • New Orleans
New York • Philadelphia • Pittsburgh • Portland, Ore. • Roanoke, Va. • Rockford
St. Louis • San Francisco • Seattle • Syracuse • Tampa • Tulsa • Washington, D.C.
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RELIANCE A-C MOTORS

"Motor-Drive is More Than Power"

DO YOU USE WIRE CLOTH?

MICHIGAN

- Draws the Wire
- Weaves the Cloth
- Fabricates the Product

in one continuous line

OR WIRE CLOTH STRAINERS?

TO GIVE YOU

- Uniform Workmanship
- Economical Production
- Deliveries on Schedule

for your requirements

Send Michigan Your Inquiries

MICHIGAN WIRE CLOTH COMPANY
2100 HOWARD • DETROIT 16

FOR SAFETY PLUS

For *better* rubberized Work Gloves, look for the HOOD Trade Mark — a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.

HOOD RUBBER CO., WATERTOWN, MASS.
A Division of the B. F. Goodrich Company

Floodlight a 100-Ft. Area

Coleman FLOODLIGHT LANTERN

A brilliant work and trouble light for industry and business! 20 times as bright as an ordinary wick-type kerosene lantern. Safe, too—won't spill fuel even when tipped over, can't be filled when lighted. Stormproof—a 105-mile gale can't put it out. Low-cost operation—40 hours' service on a gallon of fuel—makes and burns its own gas from any good grade of clean, untreated gasoline. See a Coleman dealer—ask for a demonstration.

Fast-Action Portable Heat

Coleman HANDY GAS PLANT

Fills dozens of needs around the plant and on location—instant-lighting; quick, clean heat for warmth or cooking. Makes and burns its own gas from gasoline. Costs only a few cents a day to use. See your dealer, give it a try-out!

THE COLEMAN COMPANY, Inc.
WICHITA 1, KANSAS

WORLD'S LARGEST MAKERS OF GAS PRESSURE APPLIANCES

THE COLEMAN CO., INC. DEPT. 167Q
WICHITA 1, KANSAS
Send us more information about the Floodlight Lantern and Handy Gas Plant—no obligation.

NAME_____

ADDRESS_____

Grand Rapids, Mich.—The Rapids-Standard Company, Inc., manufacturers of material handling equipment, has moved its sales and advertising departments from The Peoples National Bank Building to enlarged quarters at The Rapistan Building, Grandville, Market and Weston Avenues.

Los Angeles, Calif.—Blackmer Pump Co. George A. Baldwin has been named manager of the company sales office at 415 S. Central Ave.

New York, N. Y.—Day-Brite Lighting Inc. George J. Taylor, until recently a practicing consulting engineer, has joined the company as supervisory sales engineer with headquarters at 92 Liberty St.

INDUSTRIAL DEVELOPMENTS

Standard of California has announced a $7,500,000 construction program to expand and modernize its Bakersfield refinery. Capacity of the plant will be increased to a crude run of 20,000 barrels daily, practically double the present capacity.

American Potash & Chemical Corp. has moved to new executive headquarters building at Sixth St. and Westmoreland Ave., Hollywood, Calif.

Sylvania Electric Products, Inc., has completed the first building in an electronic research development to be known as Sylvania Center, at Bayside, L. I. The center is designed for the long-term peacetime development of electronic and lighting equipment, television, FM and radar, and will cover an area of 28½ acres.

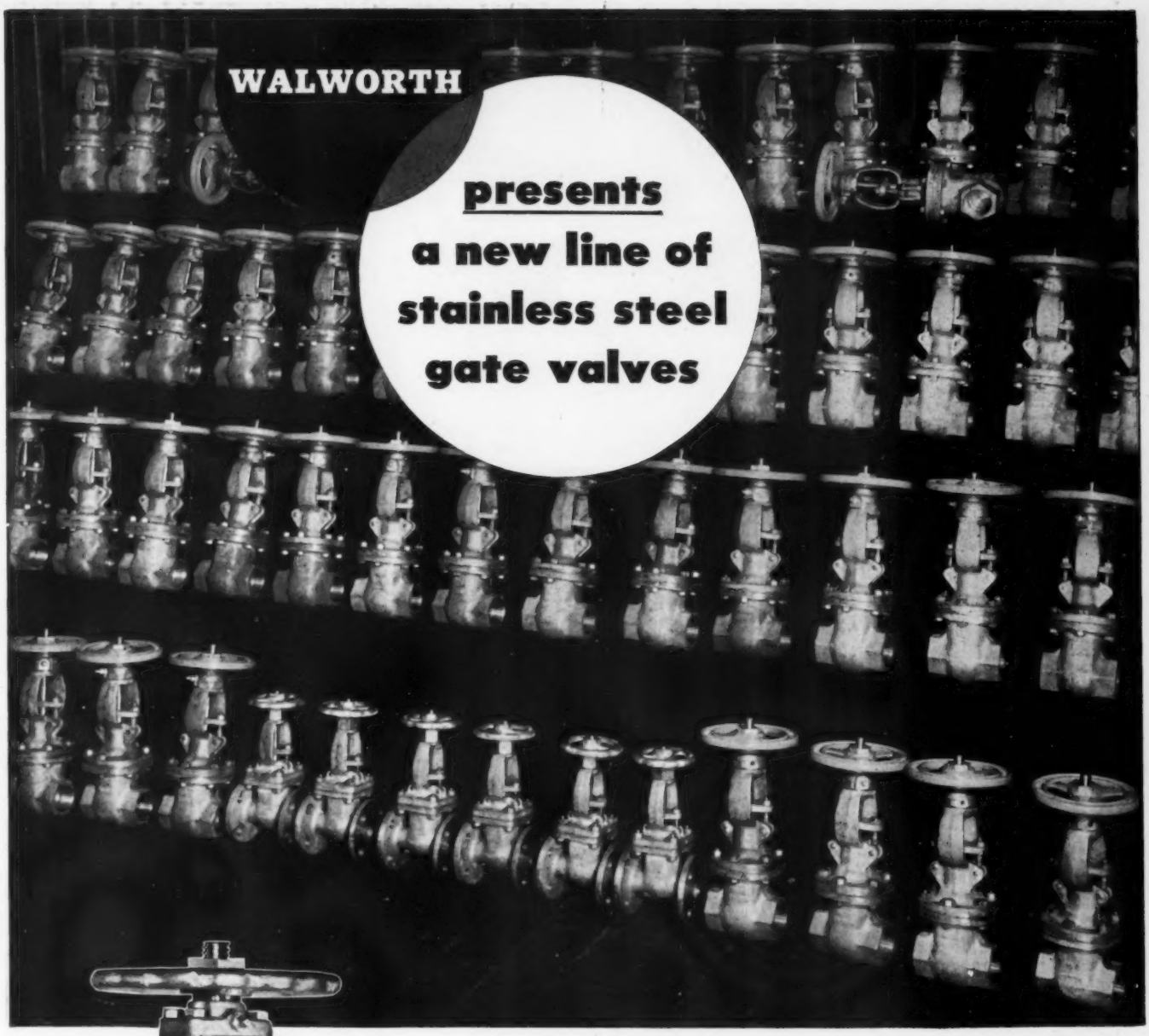
The Instrument Division of Thomas A. Edison, Inc., West Orange, N. J., has taken over the manufacture and sale of electrical resistance bulbs formerly handled by the Edison-Splitdorf Corp., a subsidiary of the parent corporation.

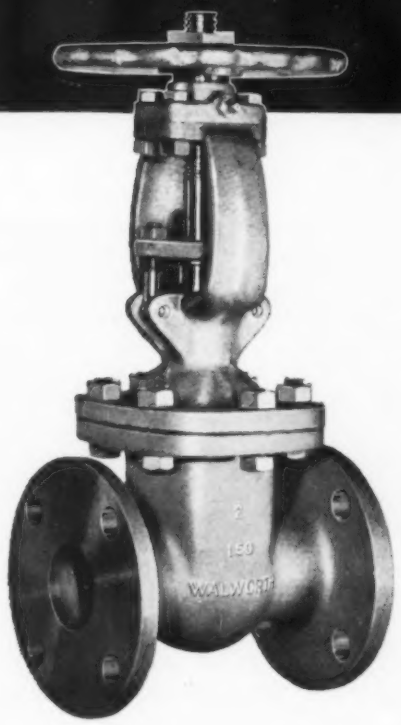
Robertshaw-Fulton Controls Company is the name of a new organization resulting from the merger of the Robertshaw Thermostat Co., Youngwood, Pa.; The Fulton Sylphon Co., Knoxville, Tenn.; and the Bridgeport Thermostat Co., Bridgeport, Conn. John A. Robertshaw is president.

Engineered Castings Division of the American Brake Shoe Company, Rochester, N. Y. N. George Belury has been appointed vice-president and Harry C. Platt works manager.

The Foxboro Company has moved into its new building in the Ville LaSalle section of Montreal, Can. It is said to be the largest plant in Canada devoted to the manufacture and sale of industrial instruments.

(*Please turn to page* 306)





Walworth's *new* line of Stainless Steel Gate Valves is an excellent modern example of Walworth valve leadership. These valves combine the latest features of advanced valve design, with the traditional manufacturing skill which has made Walworth valves famous throughout the world.

See your Walworth distributor for further information on Walworth Stainless Steel Gate Valves, or Walworth's complete line of valves and fittings in other ferrous and non-ferrous metals.

WALWORTH
valves and fittings
60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

and when you buy Reyburn's you buy the best
TAGS · LABELS · EMBOSSED SEALS · PIN TICKETS
SEND FOR YOUR FREE COPY
OF "REYBURN'S BUSINESS HELPS"
ADDRESS DEPT. B.
THE REYBURN MANUFACTURING CO., INC.
PHILADELPHIA 32, PA.
"finest quality since 1895"

RUGGED APRONS

FOR Maximum WEAR
• Immediately available to you
• "Tailored" for your needs
• Designed for Worker Protection
• Built for Hard Work
• Priced right
Every Sawyer apron is made from the best raw materials obtainable. Expert workmanship and design assures you that a Sawyer apron really protects the worker and gives maximum wear.
When you buy a FROG Brand (Oiled) apron, you are sure of buying one of the best industrial aprons manufactured.
STYLE K-76
36" Wide
48" Long
Heavy Duck
Yellow Only
STYLE G-58
33" Wide
45" Long
Reversible
Yellow Only

THE H. M. SAWYER & SON CO.
28 Thorndike St. East Cambridge 41, Mass.

Air Reduction Company has formed a new wholly owned subsidiary, the Air Reduction Pacific Company, with H. P. Etter, formerly sales manager of the Pacific Coast division as president and director. His headquarters are at Room 1813, Mills Tower, 220 Bush St., San Francisco 4, Calif.

Auto-Lite Battery Corp. has completed plans for the construction of a manufacturing plant at Clearwater, Calif. The plant will cover 80,000 square feet, and production of automotive storage batteries is expected to be under way by the third quarter of 1948.

Boice-Crane Co., Toledo, O. producers of power tools and intermediate capacity wood working machinery, has been incorporated.

Keystone Bolt & Nut Corp. has moved into a new, six-story building at 125 Church St., New York, N. Y.

Amalgamated Steel Corporation, Newburgh Mill District, Cleveland, O., has broken ground for a large addition to its warehouse.

Dale Bearings, Inc., has been organized with offices at 1974 Broadway, N. Y., to distribute the anti-friction bearing products of several nationally known manufacturers. Clayton A. Decker is president of the firm.

New Holland Machine Co., New Holland, Pa., has become associated with the Sperry Corporation and will operate as a division of Sperry. The New Holland Metals Co. and the New Holland Manufacturing Co. will operate as divisions of the New Holland Machine Co. Formerly a New Holland affiliate, the Hertzler & Zook Co. of Belleville, Pa., will be consolidated with and operated as a division of the New Holland Machine Co.

Oliver Iron & Steel Corp. has purchased and opened a new warehouse in Birmingham, Ala., to handle Oliver pole line hardware and construction specialties. The new warehouse, located at 2431 North 29th Ave., will quadruple the company's former facilities.

Monsanto (Canada) Ltd., Montreal, Can., has assimilated Laucks, Ltd., Granville Island, Vancouver, B. C., a wholly-owned subsidiary.

Textron, Inc. is the new name of the former Textron Manville, Division of Nashua Mfg. Co. The Manville unit will be known as the Manville Division.

Nichols Wire & Aluminum Co., Davenport, Iowa, is the new name of the former Nichols Wire & Steel Co. The company entered the aluminum business two years ago, and the change in name reflects its intention to continue.

(*Please turn to page* 308)

PRE-TESTING AND RE-TESTING
—behind every Okonite Cable

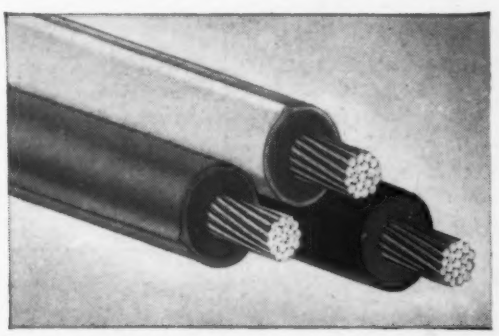
THESE D. C. TESTS FOR IMPERFECTIONS . . . At Okonite regular d. c. tests pick out imperfections in insulated wires and cables not detected by conventional methods. These d. c. tests, at 4 times the a. c. values, are in addition to the routine high voltage tests. "Something extra" is typical of Okonite production techniques and research procedures.

THIS "FOUL WEATHER" FRIEND TO CABLE USERS . . . Every kind of weather but fair is manufactured in Weatherometer used for testing sections of Okonite cable. Repeated cycles of water spray and ultra violet light are combined with freezing in a refrigerator. The result: violently contrasting effects which test cable drastically.

THIS OKONITE "TWIST" on CABLE TESTING . . . Okonite research includes subjecting short lengths of electrical cable to torsion tests, twisting through a spiral arc of 180° under load. Bending tests, impact tests, tests of wear-resistance by abrasion — these mechanical tests round out a program of electrical, chemical and weather exposure tests.

THIS BOMB THAT DESTROYS GUESSWORK . . . While accelerated aging tests cannot replace the study of actual exposure to weather in proving ground and in the field, they have a definite place in estimating the value of electrical insulation. The oxygen bomb used in these tests is one of many pieces of modern equipment used in Okonite research.

THIS GLOWING TRIBUTE TO CABLE FITNESS . . . Is a cable covering flameproof? Will it resist high temperatures when it comes to actual service? Flame tests in the Okonite laboratories help to answer questions like these long before a cable is manufactured. The measured current that makes the coil glow makes it possible to reproduce test after test without variation.

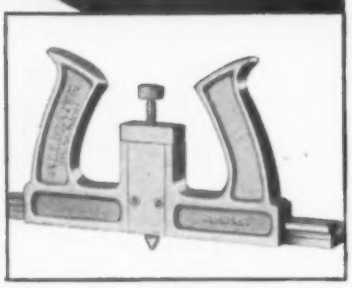


AS A RESULT OF SUCH TESTS, Okonite has developed cables like Okolite-Okoprene (above) which combines heat-resistant, electrically stable Okolite insulation with a bonded sheath of Okoprene which resists oil and chemicals and is non-flammable. Executives in charge of electrical equipment will find buying data they need in Bulletin OK-1037. Write to The Okonite Company, Passaic, N. J.

6007

OKONITE SINCE 1878 **insulated wires and cables**

MAKES CUTTING OF WIDE BELTS *Easy*



Here is a tool that makes the cutting of wide conveyor and transmission belting a simple and easy job—it's the Alligator Wide Belt Cutter for cutting all belts (except those containing metal) up to 60" wide and 1⅛" thick.

The guide rail is clamped or nailed to the belt and the cutter head is pushed across the belt. Each cut is made about ⅛" deep and with several rapid strokes the belt is cleanly and squarely cut.

Bulletin No. BC-350 gives all the details on this new cutter.

Order from your Supply House

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street,
Chicago 44, Illinois

Also sole manufacturers of Alligator Steel Belt Lacing for transmission and conveyor belts, Alligator V-Belt Fasteners and Flex V Fasteners, for V-Belts. Flexco HD Fasteners and Rip Plates and Hinged Flexco Fasteners for conveyor belts.

Hammel-Dahl Co., Providence, R. I., manufacturers of automatic controls, has been incorporated. There will be no change in the management of the company.

Berkley Industries has been formed at Jersey City, N. J. with Murray Herman as president. The company is the result of a merger of Consolidated Razor Blade Co., Inc.; Flashlight Co. of America, and Steel Tape Co. of America.

The Indiana Steel Products Company has purchased the Cinaudaugraph Corp. of Stamford, Conn. and moved its operations to Chauncey, N. Y.

Upper Peninsula Power Co. has acquired and is now operating the electric utilities formerly owned by the Houghton County Electric Light Co., Iron Range Light and Power Co., and Copper District Power Co. The main office is located at 616 Shelden Ave., Houghton, Mich.

The Electric Auto-Lite Co. has purchased the former Wright Aeronautical plant at Lockland, O. for $8,400,000. The plant, which consists of more than 4,000,000 square feet, was obtained to alleviate congested conditions at the lamp division of the company in Cincinnati.

Eastern Carbide Corp. has been formed at 909 Main St., New Rochelle, N. Y., with Anthony J. Allen as president. The company offers a complete line of carbide items including the base metal and finished tools and dies. It is the eastern distributor for Wendt-Sonis Co. of Hannibal, Mo.

CAMPBELL NAMED NEW YORK REGIONAL DIRECTOR OF WAA

John R. Campbell has been appointed Regional Director of the War Assets Administration for Region II, comprising New York state, northern New Jersey and Fairfield County, Conn. Mr. Campbell recently served as national head of the WAA Priority Claimants Division in Washington. He is a former aeronautical engineer and training executive of the Boeing Aircraft Co. and an army veteran with more than three years' overseas service with the 8th Air Force.

Alwyn A. Throckmorton, former Regional Director of Region II, has been named manager of scrap procurement for the Kaiser Aluminum division of the Permanente Metals Corporation.

IDLE SURPLUS IS IDLE CAPITAL! CONVERT IT TO CASH . . . LIST YOUR COMPANY'S SURPLUS IN PURCHASING'S CLASSIFIED SECTION NEXT MONTH

SEE PAGE 342

REVOLVATOR *GO-GETTER* POWER LIFTRUCK

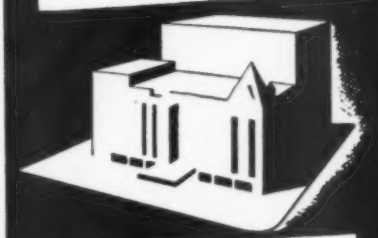
(Skid Platform Type)

Finger touch directional controls on handle lift loads up to 6,000 lb., move truck forward or backward, and gently drop loaded skid where wanted. Delayed action motor control and deadman controlled hydraulic braking. Adjustable Timken bearings throughout. Maximum safety, efficiency and durability.

High lift and pallet types available. Also Portable Elevators, Hydraulic Lifts, Red Giant Liftrucks and other material handling equipment. Send for Bulletins.

REVOLVATOR CO.
DESIGNERS AND MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT
8752 Tonnele Ave. Since 1904 North Bergen, N. J.

1000 ROOMS IN *CLEVELAND*

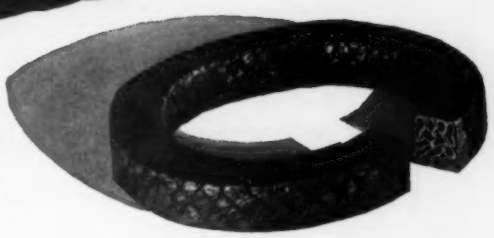


HOTEL HOLLENDEN

ROBERT P. JOYCE
GENERAL MANAGER

R/M flexible metallic packing

R/M No. 920



R/M's flexible metallic packing is a new and valuable addition to the R/M line, recommended for use on steam and air rods, centrifugal pump shafts, valve stems and other applications where the temperature does not exceed 450°F., and surface speed is less than 600' per minute.

Like a fabric packing, this packing is sensitive to gland adjustment, but it has the added advantage of non-frictional wearing surface. It is constructed of non-frictional metallic foil and asbestos yarns, combined with temperature-resistant lubricants and flake graphite. The outer layer is an open-mesh, braided cotton jacket.

This packing is typical of the engineering that goes into R/M products. For special jobs where you need packing by prescription, or for the routine work where you demand the utmost in dependability, see the authorized R/M distributor near you.

RAYBESTOS-MANHATTAN, INC.

ASBESTOS TEXTILE & PACKING DIVISION

Manheim, Pa. • Bridgeport, Conn. • North Charleston, S. C. • Passaic, N. J.

IT'S "PACKED WITH SATISFACTION" WHEN YOU USE R/M

R/M

RITCO

DIESEL BOLTS

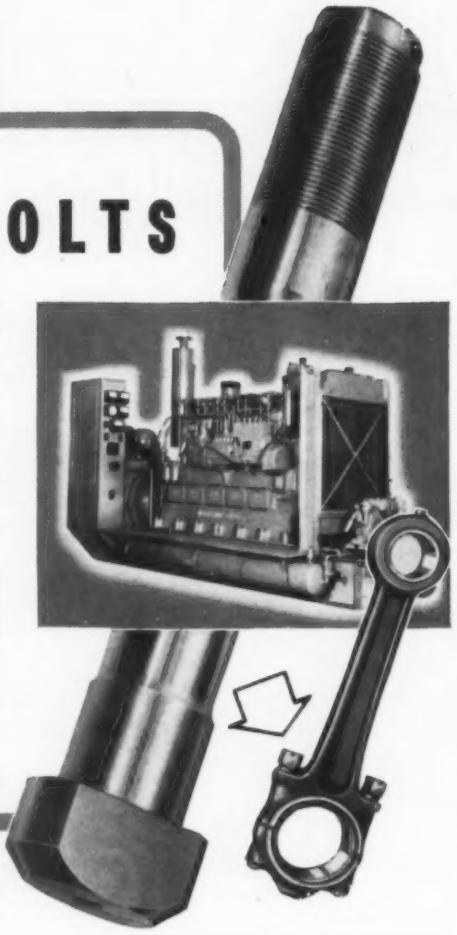
RITCO Diesel Engine Bolts and Studs have the high strength and accuracy essential to top Diesel performance. They are built for heavy duty service, with precise threads and surfaces highly finished to close tolerances. RITCO Connecting Rod Bolts and Nuts are made in any metal up to 2" diameter, exactly to your blueprint.

Remember RITCO For
Special Bolts, Nuts and Studs • Alloy Steel Studs • Milled Body Bolts Drop Forging • Heat Treating

Let us quote on your specifications

RHODE ISLAND TOOL COMPANY
148 WEST RIVER ST., P. O. BOX 1516
PROVIDENCE 1, R. I.

Serving American Industry Since 1834



Typical of the high quality construction of this 8" x 10½" Diesel engine by the Wolverine Motor Works, Bridgeport, Conn., are the RITCO Quality Bolts and Nuts used in its connecting rods.

All Blade Finishes new Black except Molders' Shovels which may be furnished with either face or back polished.

A "Good Buy" in SHOVELS!

That's what you get when you specify . . .

INGERSOLL *Shovels*

One reason they are such a "good buy" is that their blades are made of TEM-CROSS Steel . . . guaranteed *not* to split at the blade edges. You get this extra value and better service without paying a premium for it.

So whenever you order Shovels, be sure to specify "Ingersoll"—"A Borg-Warner Product."

INGERSOLL STEEL DIVISION
Borg-Warner Corporation
NEW CASTLE, INDIANA
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

VICE ADMIRAL HUSSEY NAMED ADMINISTRATIVE HEAD OF ASA

Vice Admiral George F. Hussey Jr., USN (Ret), wartime Chief of the Navy's Bureau of Ordnance, has joined the staff of the American Standards Association as administrative head of the organization. In this capacity he will direct the cooperative efforts of industry, consumers and government in the problem of standardization. Cyril Ainsworth, who for a number of years has been in charge of the technical activities of the ASA, will serve with Admiral Hussey as director of operations of the staff.

The association, faced with an unprecedented demand for service, expects to increase its activities during the next year to approximately three times that of the largest year before the war.

SUPERIOR FOUNDRY NAMES DUNBAR SALES MANAGER

John E. Dunbar

John E. Dunbar has been appointed sales manager of Superior Foundry, Inc., Cleveland, O. Mr. Dunbar was associated with The Lycoming Motor Corp. for 17 years and for the past 10 years with the White Motor Co. as Director of Purchasing. He is a graduate of Pennsylvania State College.

MARKET FORGE COMPANY APPOINTS DISTRIBUTORS

The Market Forge Company, Everett, Mass. has appointed the following as stocking distributors in their cities and surrounding areas: National Distributors, Millville, N. J.; Freeman Industrial Service, 450 N. Main St., Providence, R. I.; W. P. & R. S. Mars Co., 324 W. Michigan St., Duluth, Minn.

KELLY ELECTED 1ST V. P. OF AMERICAN BRAKEBLOK

William T. Kelly, Jr. was elected first vice-president of American Brakeblok Division of the American Brake Shoe Company at a recent meeting of its board of directors. Mr. Kelly, who has served as vice-president of American Brake Shoe since 1946, has been with the company since 1928. In addition to his new duties, he will continue as president of the Kellogg and Engineered Castings Divisions, positions which he has held since 1945 and 1946, respectively.

BAKELITE EXPANDS PLASTICS MANUFACTURING FACILITIES

The most extensive program for the expansion of plastics manufacturing facilities in the 37-year history of Bakelite Corp., a Unit of Union Carbide and Carbon Corp., New York, is now in progress and is scheduled for completion during 1948. Facilities for production of all plastics and resins marketed by the corporation will be increased 50 to 60 per cent. In individual products increases will range from 30 to 400 per cent. The program includes construction of three new plants and expansion of three of the corporation's existing plastics - producing plants.

INLAND APPOINTS SMITH GENERAL MANAGER OF SALES

Inland Steel Co. has announced the appointment of John F. Smith, Jr., as general manager of sales. He succeeds Albert C. Roeth, who has retired. Mr. Smith joined the Inland organization in 1929 as a production clerk. The company also announced the appointment of John J. Davis, Jr., as manager of sales, railroad division.

SIGNODE SALESMEN GET 4-WEEK COURSE IN STEEL STRAPPING

More than 100 salesmen of the Signode Steel Strapping Co., Chicago, Ill. have taken the intensive sales training course inaugurated by the company in 1946. The course extends over four weeks, and studies cover many demonstrations of practical, up-to-date packaging techniques, newest methods of materials handling, correct application of steel strapping to all types of shipping packs, to securing loads in carriers, and the principles of good shipping container construction.

FREIGHT CAR PRODUCTION HITS HIGH PEAK

Freight car production for American railroads reached a peak of 9,803 cars during December, more than tripling January production of the same year, the American Railway Car Institute, New York, announced recently.

Reporting for the month, the Institute said that the car builders delivered 7,661 cars and the railroad shops produced 2,142, In January of last year the car builders delivered 2,265 domestic freight cars and the railroads themselves constructed 717.

During the year, with production showing a steady increase, 68,487 new cars were added to the domestic fleet, while at the same time the car builders completed construction of 27,646 for export. Export shipments which were abnormal due to a 1946 order of 36,000 cars for the rehabilitation of France, are expected to be small during the coming year unless stepped up under the Marshall Plan. Relatively few export orders are now on the books of the car builders.

(*Please turn to page* 312)

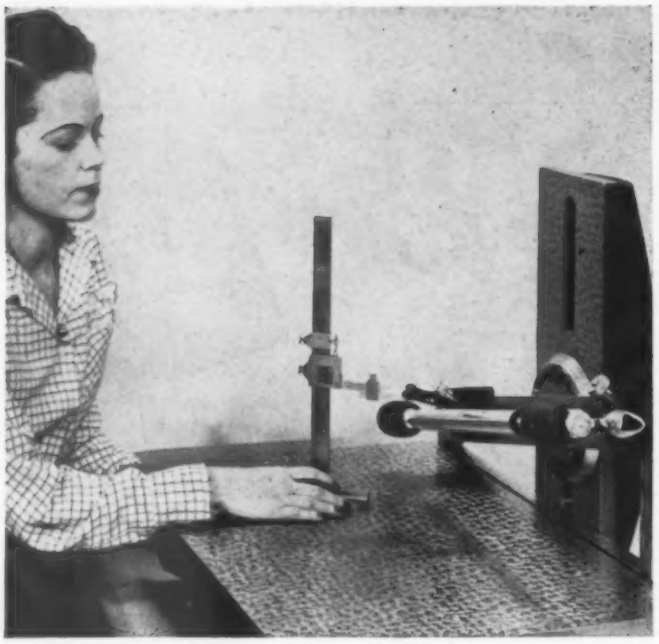
This
FREE BOOK
shows how to save on NAME PLATES
DESIGNS FOR NAME PLATES
Over 4500 shapes and sizes of name plates for which we have dies in stock are shown in this book. By choosing one of these designs you can effect a material saving. If you or your Engineering Department can make use of it write us now for a copy of "Designs for Name plates"... Ecoa quality is enduring. Your request for a quotation is solicited—you will receive a prompt reply.
SQUARE D
A.C. MANUAL STARTER
SOUTHWESTERN BELL TELEPHONE COMPANY
MOTOR VEHICLE GROUP
DESIGNATION AND NUMBER
DO NOT DESTROY
GENERAL ELECTRIC
BARD
Model No. Serial No.
Bard Mfg. Co., Bryan, O.
CEMCO-MENZEL COMPARATOR
CENTRAL SCIENTIFIC CO.
CHICAGO, U.S.A.
BELL SYSTEM SERVICE
EQUIPMENT SUPPLIED BY
TELETYPE CORPORATION
THE EXACT WEIGHT SCALE CO. COLUMBUS, O.
"EXACT WEIGHT"
REG. U.S. PAT. OFF.
NO.
MODEL
TRIMALAWN
SERIAL NO.
LAWN MOWER DIVISION
REO MOTORS, INC.
LANSING, MICH.
U.S.A.
TEMCO
GAS HEATER
TENNESSEE ENAMEL MFG. CO.
NASHVILLE, TENN.
E.H. SARGENT & CO.
ECOA
Name Plates

ETCHING COMPANY OF AMERICA

1520 MONTANA STREET, CHICAGO 14, ILLINOIS, DEPT. C-2

Metal Name Plates, etched or lithographed • Plastic Name Plates, Dials and Panels, lithographed or screened • Etched Metal Scales, Clock Dials, Instrument Panels, Art Novelties, Advertising Specialties • Etched Metal Panels for elevators and architectural uses.

SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA



50% more working surface

WITH MERZ UNIVERSAL CHECKING PLATES

MERZ Universal Checking Plates are of unique design, with all attachments connected on the outside. The result is 50% more working surface —an advantage found only in MERZ.

You can depend on MERZ Checking Plates and Fixtures to speed up complicated checking operations. Bench centers and "V" blocks are fitted by exclusive design, with angle groove in master plate and attachments. This maintains positive pressure against edge and surface at all times. Various attachments, including a 20" sine bar fixture, offer a wide range of checking combinations not available with standard units.

MERZ Universal Checking Plates and Fixtures are cast from special, fine-grained gray-iron alloys —are extremely rigid and unconditionally guaranteed against warpage. Available in a wide range of sizes to meet every requirement.

MERZ builds a complete line of precision inspection equipment, including AGD standard plugs and gages and well-known *New-Matic* Measuring Machines, Taper Gages and Automatic Sorting Machines. Write for complete information, including illustrated technical data.

MERZ ENGINEERING COMPANY • INDIANAPOLIS 7, IND.

MERZ

NEW YORK WAA REGION MAPS CLOSE-OUT PROGRAM

John R. Campbell, WAA Regional Director, Region No. 2, New York, announces a three-point "close out" program for 1948, to dispose of surplus goods worth approximately $500,000,000 in cost value, to close satellite warehouses, and to reduce staff for the final completion of the job.

"Our close-out aims do not mean that we have scraped the bottom of the barrel of government surplus", he said. "We still have large stockpiles from which commerce and industry may draw 1948 bargains in consumer goods, supplies and equipment. We will move to market by all possible sales methods in the next six months many basic goods of value to the merchant and producer at prices earning a reasonable current market recovery to the taxpayer."

CFC RULE 41 FIBREBOARD CONTAINERS

"Fibreboard boxes made to conform to specifications of Rule 41 must bear certificate of boxmaker clearly showing that boxes actually conform, thus—"This Box conforms to all construction requirements of Consolidated Freight Classification" Shipper, too, must certify on shipping orders and Bills of Lading—"The Fibre boxes used for this shipment conform to the specifications set forth in the boxmaker's certificate thereon and all other requirements of Consolidated Freight Classification". Boxes of a gross weight of 65 pounds must be made of a minimum strength test board of 200 pounds per square inch; and boxes grossing 90 pounds must be fabricated of Fibreboard of a minimum test per square inch of 275 pounds of combined board, Cady or Mullen test—sample boxes should be submitted to an independent testing laboratory to verify the boxmaker's certificate and avoid 20% L C L and 10% C L penalty for non-conforming boxes." *National Paint, Varnish and Lacquer Association.*

FORM JOINT BUYING SERVICE FOR PENNSYLVANIA HOSPITALS

The Hospital Purchasing Service of Pennsylvania, an agency formed to reduce purchasing costs to hospitals participating in it, has been chartered by the Hospital Council of Philadelphia. The council includes fifty-five member hospitals in southeastern Pennsylvania and southern New Jersey. Thirty-four hospitals have already announced that they will join in the plan.

Principal objective of the central purchasing agency is to reduce purchasing costs. The announcement of its formation stated that it will deal only in food and dietary articles at the outset, but eventually will branch into all hospital supplies. The service will supplement rather than supplant present individual purchasing plans of participating hospitals, it was announced.

(*Please turn to page* 314)

When the Order is for Portable Electric or Pneumatic Tools

Order SKIL Tools

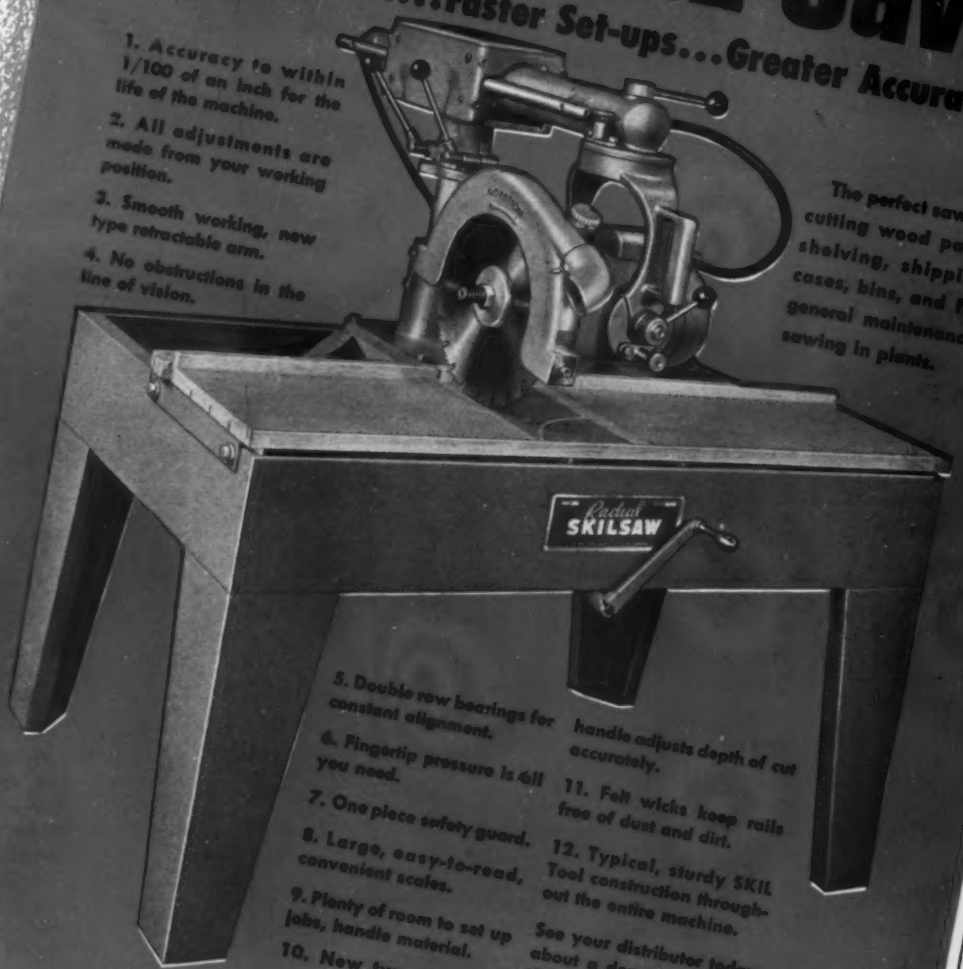
• They're quality-built for long-run economy. They're the choice of workmen everywhere who know power, speed, perfect balance and handling ease. No finer tools than SKIL Tools are made . . . you can order them with full confidence.

Speed Production Cutting with this NEW

Radial SKIL* Saw

New Type Arm . . . Faster Set-ups . . . Greater Accuracy

1. Accuracy to within 1/100 of an inch for the life of the machine.
2. All adjustments are made from your working position.
3. Smooth working, new type retractable arm.
4. No obstructions in the line of vision.



The perfect saw for cutting wood parts, shelving, shipping cases, bins, and for general maintenance sawing in plants.

5. Double row bearings for constant alignment.
6. Fingertip pressure is all you need.
7. One piece safety guard.
8. Large, easy-to-read, convenient scales.
9. Plenty of room to set up jobs, handle material.
10. New type elevator handle adjusts depth of cut accurately.
11. Felt wicks keep rails free of dust and dirt.
12. Typical, sturdy SKIL Tool construction throughout the entire machine.

See your distributor today about a demonstration of the model that fits your needs, up to 3 H.P.

SKILSAW, INC.
3633 Elston Ave., Chicago 18, Ill.
In Canada: SKILTOOLS, LTD., 66 Portland St., Toronto, Ont.
*SKIL Saw is made only by SKILSAW, INC.

ELECTRIC PNEUMATIC
SKILTOOLS

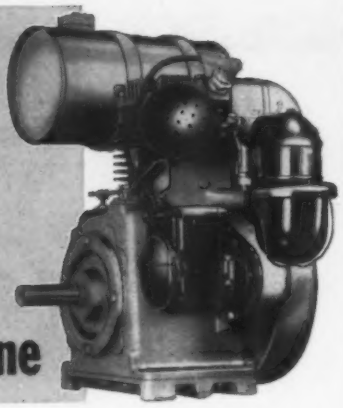
SKIL Saws SKIL Sanders SKIL Shear SKIL Nibbler SKIL Grinders SKIL Drills

*This advertisement is appearing in leading industrial publications

You Get

HEAVY-DUTY SERVICEABILITY in a Small Engine

WHEN YOU SPECIFY WISCONSIN *Air-Cooled* Engine



In designing power-operated equipment within a 2 to 4 hp. range . . . one of the vitally important considerations is to secure a power unit that can be depended upon for *heavy-duty serviceability*.

This is one of the predominant characteristics of the little Models AB and AK Wisconsin Air-Cooled Engines. Every detail of design and construction . . . from the Timken tapered roller bearing mounting of the crankshaft front and rear, to the mirror-honed cylinder . . . has been engineered for heavy-duty operation under rugged conditions. These engines are equipped with rotary type outside magneto impulse coupling, assuring quick, easy starting in any weather, at any season.

Write for detailed specifications and other pertinent data. Wisconsin Air-Cooled Engines are available in 4-cycle single cylinder and V-type 4-cylinder models in a complete power range.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

PAGE FENCE *-Since 1883*

• AMERICA'S FIRST WIRE FENCE •

How to Choose the Right Fence

● The right fence for you is made by PAGE, pioneer maker of Chain Link Fence and developer of many major fence improvements. Your fence can be the one of several PAGE styles which is best suited to your needs. It can be had in a choice of metals to give you the one you prefer or require. The nearby Page Fence Association member will confer with you on the fence you need and submit cost estimates without obligation. He is a long-experienced specialist who will erect your fence expertly. Write for illustrated information and we will send name of the member nearest you.

For name of nearest member firm, write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE • BRIDGEPORT, CONN.

HUGE INCREASE IN PLASTICS PRODUCTION FORECAST

A production high of 1,500,000,000 pounds, plus continuing plant and facilities expansions totaling at least $175,000,000 are among the outstanding objectives of the plastics industry for 1948, according to Geo. H. Clark, president of The Society of the Plastics Industry. 1947 production was approximately one billion pounds. The Society estimates that about a half-billion pounds of plastics will be used throughout American homes in 1948. The automobile industry will consume another 50 million pounds; refrigerator manufacturers will use 32 million pounds, and radios will use 12 million pounds, and it is estimated that at least 15 million pounds will be used in the aviation industry.

1 1 1

CUBA RESTRICTS RELATIONS BETWEEN FOREIGN FIRMS AND AGENTS

The Cuban Government has placed restrictions on relations between foreign firms and their agents in Cuba, according to announcement by the Department of Commerce, Office of International Trade. Under the terms of the restrictions, any foreign firm using the services of a representative, agent or distributor in Cuba will not be permitted to cancel or revoke its agreements with such representatives for the purpose of transferring its representation to another firm without showing "just cause" to the Cuban Ministry of Labor. These restrictions apply even in cases where foreign firms desire to establish branches in Cuba or direct agencies to handle business now being handled by other agents, commission merchants, and the like.

The new regulations were announced in Presidential Decree No. 4504 of December 18, 1937, which was published in the Official Gazette of the Cuban Government of December 27. Foreign concerns which violate this decree will not be permitted to operate in Cuba or establish agencies.

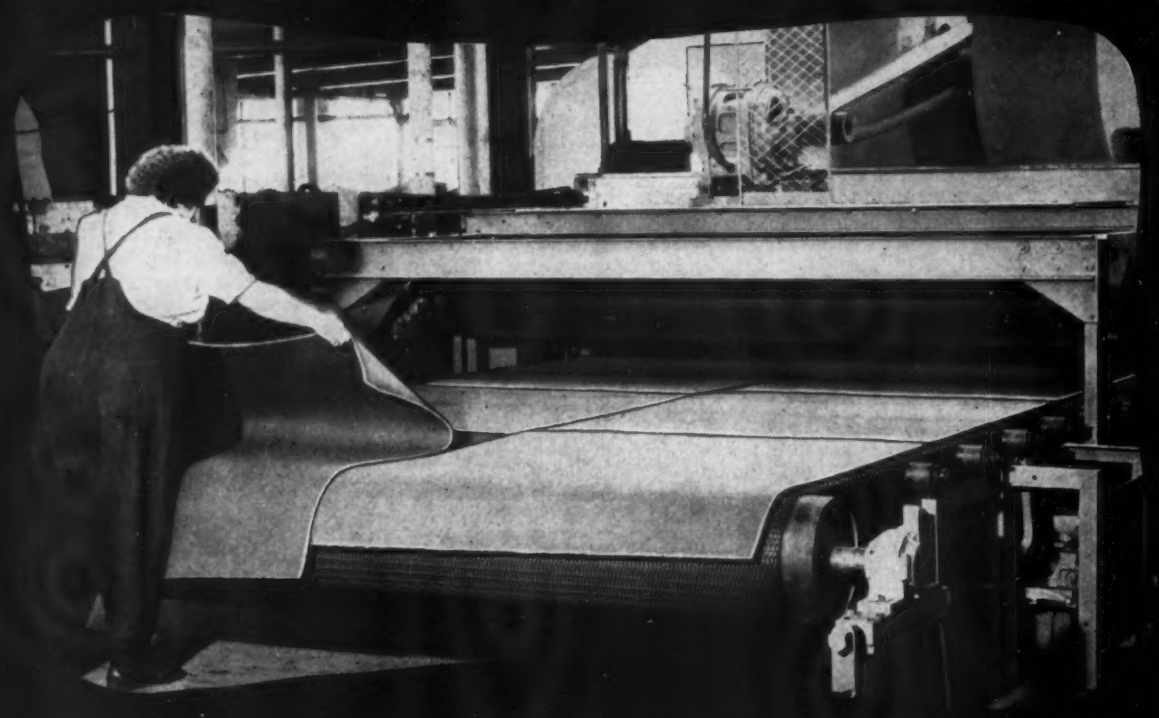
1 1 1

WAA CANCELS SURPLUS DUCK AND TENT TWILL PROGRAM

The War Assets Administration announces that it is virtually out of business in the disposal of surplus cotton duck and tent twill. The supply has been exhausted except for isolated residual small lots, and the national program cancelled in its entirety. Remaining small lots will be disposed of by the individual regional offices, WAA said, and there will be more national offerings of the goods. The New York, St. Louis and Los Angeles regional offices which were the sole sales outlets under the National program, will no longer operate in this capacity and future sales activity will be handled by the particular region in which materials are located.

(*Please turn to page* 316)

Fibreboard, Food, or Felt-backed Floor Covering



RIDE SAFELY ON WISSCO BELTS

This Wissco Belt is 120 inches wide; over 160 ft. between centers; of 24-20-15 Wissco patented, balanced spiral weave construction. Photo courtesy of Rogers Corporation, Manchester, Conn.

IN THIS INSTALLATION, wet laminated sheets of Rogers-Bords are placed on a 10-ft. wide Wissco Belt and taken for a 160-ft. ride through a tunnel dryer. Above this belt is a shorter belt arranged so that it keeps the board flat when passing through the dryer.

Long, wide Wissco Belts like this are adaptable for use in baking of bread or crackers; in annealing of glassware or aluminum sheets; in baking color on felt-backed floor covering or ceramic ware—and countless other industrial processing operations.

Every Wissco Metal Conveyor Belt is custom-engineered; some to operate efficiently at sub-zero temperature, others to carry hot and heavy loads at brazing temperature; still others to withstand the punishment of chemical gases and liquids, abrasion and other destructive forces.

Fifty years of pioneering in belt development and design have provided the know-how for answering difficult conveyor belt problems—of bringing new highs in production; new lows in cost. Let us send you our illustrated catalog showing types and advantages of numerous conveyor belt constructions. And if you have a question regarding conveyor belts, won't you write us?

WISSCO METAL CONVEYOR BELTS

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

CF&I

Belt Sales Office and Plant — 56 Sterling St., Clinton, Mass. • *Executive Office* — 500 Fifth Ave., New York 18, N. Y.

Sales Offices—Boston, Buffalo, Chattanooga, Chicago, Denver, New York • *Pacific Coast Subsidiary*—The California Wire Cloth Corp., Oakland 6, Cal.

EXACT DUPLICATION

an important reason for specifying S.S.WHITE FLEXIBLE SHAFTS

Success of a flexible shaft application depends principally on selecting the right shaft for the job. Once this is done and the application goes into production, its continued success depends on getting shafts from the supplier which are exact duplicates of the original in characteristics.

When you use S.S.White flexible shafts you can count on exact duplication because:

1. Special machines, developed by S.S.White engineers faithfully reproduce specified characteristics in every foot of the given shafting for which they are set.
2. S.S.White's basic policy of strict adherence to original specifications assures that no change is ever made in grade of wire or construction without the full knowledge and approval of the user.

This assurance of exact duplication is another big reason why so many flexible shaft users have learned from experience that there is no "or equal" for S.S.White flexible shafts.

FLEXIBLE SHAFT FACTS FOR YOU

BULLETIN 4501 contains basic information about S.S.White flexible shafts, including tables of sizes and physical characteristics and principles of selection and application. Write for a free copy today—also for additional copies for your engineers.

S.S.WHITE INDUSTRIAL DIVISION
THE S. S. WHITE DENTAL MFG. CO.
DEPT. P, 10 EAST 40th ST., NEW YORK 16, N. Y.

FLEXIBLE SHAFTS • FLEXIBLE SHAFT TOOLS • AIRCRAFT ACCESSORIES
SMALL CUTTING AND GRINDING TOOLS • SPECIAL FORMULA RUBBERS
MOLDED RUBBERS • PLASTIC SPECIALTIES • CONTRACT PLASTICS MOLDING

One of America's AAAA Industrial Enterprises

INSTITUTE OF NUMERICAL ANALYSIS ESTABLISHED

Plans have been completed for the establishment of one of the newest units of the National Bureau of Standards—the Institute of Numerical Analysis—at the University of California at Los Angeles, according to an announcement by Dr. Edward U. Condon, Director of the Bureau.

One of the giant high-speed electronic computing machines, now under development by the Bureau of Standards, will be installed at the Institute when completed. These computers will solve problems in minutes that now take days to work out, and will solve in days problems that are now out of the reach of scientists. Design specifications call for high memory capacity and automatically sequenced mathematical operations from start to finish at speeds attainable only with electronic equipment.

The machines can conceivably revolutionize the field of applied mathematics. Of particular importance both to the physical sciences and to technical industries will be the fact that the Institute will be able to set up a mathematical counterpart of an actual situation, which permits the situation then to be studied through relatively inexpensive calculating rather than costly experimentation. Great as has been the progress of the past century, the time has come when many problems of great importance, especially in hydrodynamics, aerodynamics, and meteorology, can only be handled by computers working at speeds measured in millionths of a second.

The Institute has two primary functions. The first is research in applied mathematics aimed at developing methods of analysis which will extend the use of the high-speed electronic computers. The second is to act as a service group for Western industries, research institutions, and government agencies. The service function will include not only the use of the machines for problem solving but also assistance in the formulation of problems in applied mathematics of the more complex and novel types. Service operations are to be initiated immediately, using the latest types of commercially available computing equipment.

IF YOU ARE BUYING WESTERN PINE

For many years the Western Pine Association has issued Grading Certificates to capable graders whose work is checked regularly by the Association's Grading Bureau and found to be up to required standards. These certificates are issued to graders as "badges of merit," and as incentive for graders to do better work. They also give employers or prospective employers an indication of graders' ability, reliability and experience.

In order to safeguard its use, each Grading Certificate states clearly on its face that it does not entitle the holder to make official Association inspections of shipments, expires one year from the

(*Please turn to page* 318)

These Bolts are oversize

These Bolts are undersize

These Bolts are just right

Circle Ⓑ Bolts and Nuts . . . both standard and special . . . are manufactured on the latest precision machinery. They are held to close tolerances that assure easy installation and dependable service.

BUFFALO BOLT COMPANY
North Tonawanda, N. Y.
SALES OFFICES IN PRINCIPAL CITIES
Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

. . . they are CIRCLE Ⓑ BOLTS

DARNELL CASTERS

Specify Darnell for Complete Satisfaction

• Save Money, Floors, Equipment and Time by using DARNELL Casters and Wheels . . . Always dependable,

A SAVING AT EVERY TURN

DARNELL CORP LTD
LONG BEACH 4, CALIFORNIA
60 WALKER ST NEW YORK 13 N.Y.
36 N CLINTON CHICAGO 6 ILL.

(*Continued from page* 316)

date of its last renewal by the Association's Chief Inspector and is automatically canceled when the holder is no longer employed where his work is checked regularly by Grading Bureau inspectors.

The ability of certified graders is so well known in the industry and among its customers that a few shippers have attempted to capitalize upon that reputation by having graders who may hold certificates, now invalid because their work is no longer being checked, sign statements on invoices, giving the numbers of the certificates issued to them and "certifying" to the grade and tally of the shipments. Lumber hungry buyers, though unacquainted with the shippers, occasionally have relied upon these "certifications", paid sight drafts for 100 percent of invoices, and then been disappointed with the lumber they received.

There has been very little complaint upon the work done by graders holding valid certificates. Issuance of these certificates undoubtedly has done much to improve the grading work in the Western Pine region. However, buyers should understand that the mere fact a grader at one time was issued a Grading Certificate does not guarantee the grade of a shipment. It is still important to know the shipper you are dealing with. If he is responsible a shipment will either be up to specifications or, if something occasionally goes wrong, a settlement may be based upon an official reinspection.

ROPE: A UNIVERSAL PRODUCT

American rope makers reach to the far corners of the earth for the fibers they need to meet the universal demands of 141,000,000 Americans for rope, reports the Columbian Rope Co., Auburn, N. Y. Whether it's for 5,300,000 farmers or 107,000 fishermen in this country, or for a mechanic or a housewife, there's a steady flow of cordage fibers to American factories to make up the estimated 300,000,000 pounds of rope and twine that will be produced in this country this year.

With a negligible supply of raw materials available in the United States, large and small cordage makers alike look to to the Philippines and Africa, the East Indies, India, and Middle America for their basic fibers. The Philippine Islands, with their world famous Manila hemp, are the largest single source of abaca fibers. The Columbian Rope Company maintains its own packing plant in the Philippines to sort and bale the raw rope material for shipment.

Manila fiber, the correct name for which is abaca, is still the number one hard fiber used in rope making, but it is also grown commercially in Sumatra, Honduras, Guatemala, Costa Rica and Panama. Abaca production in the western hemisphere, which was developed principally during the war, totaled about 50,000,000 pounds in 1946, compared with 25,000,000 pounds in 1945.

(*Please turn to page* 320)

Star makes the right blade to Cut Costs

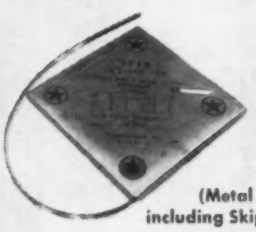
IT stands to reason: your best chance of finding the *right* blade — the blade that'll cut down "rejects" and replacement cost — is offered by a complete line . . . the Star line. Your Star supplier can give you a wide choice. He has a Star blade for every job a hack saw or band saw can do. No matter what you're cutting — metals, plastics or other non-metallics — he can furnish you with the Star that'll cut it cleaner, faster, better — the *right* blade to *cut costs for you.*

HAND BLADES

FRAMES

STAR HIGH SPEED

POWER BLADES



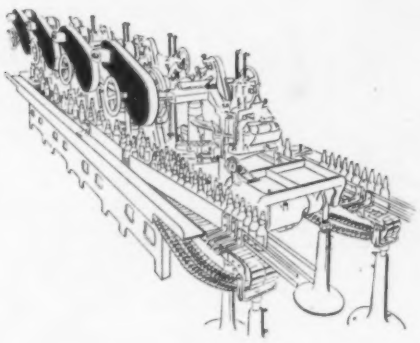
BAND SAWS
(Metal cutting, including Skip-tooth)

FREE BOOKLET OF HACK SAW HINTS. Specifications, tips on use, prices. Free from Star suppliers.

Sold only through recognized distributors

CLEMSON

CLEMSON BROS., Inc., Middletown, N. Y.
Makers of hand and power hack saw blades, frames, metal cutting band saw blades and the Clemson E-17 lawn machine



From Bottling Machines to Drilling Equipment

WHITNEY CHAIN DRIVE IS BETTER

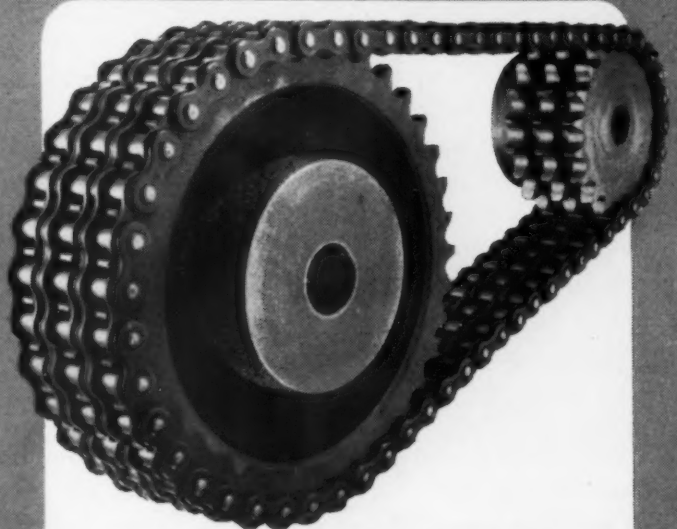
High Resistance to Shock Loads

Designers of various types of machinery can simplify their drive problems with Whitney Roller Chains. Among the many advantages derived is *high resistance to shock loads.*

Here's why. The elastic properties of the high strength steel members — the pin, roller and bushing, provides an inherent cushioning effect. Add to this a thin film of oil between the bearing members and you have a combined absorption that provides high resistance to shock.

That's only one of many advantages, however. In addition,Whitney Roller Chain transmits full horsepower. The positive grip eliminates slippage and friction loss. Its flexibility and adaptability simplifies design. The tough, rugged construction gives long life with minimum maintenance.

Whitney Chains plus Whitney Cut Tooth Sprockets . . . the *all-steel drives* . . . insure positive power transmission. Write us today for complete information.



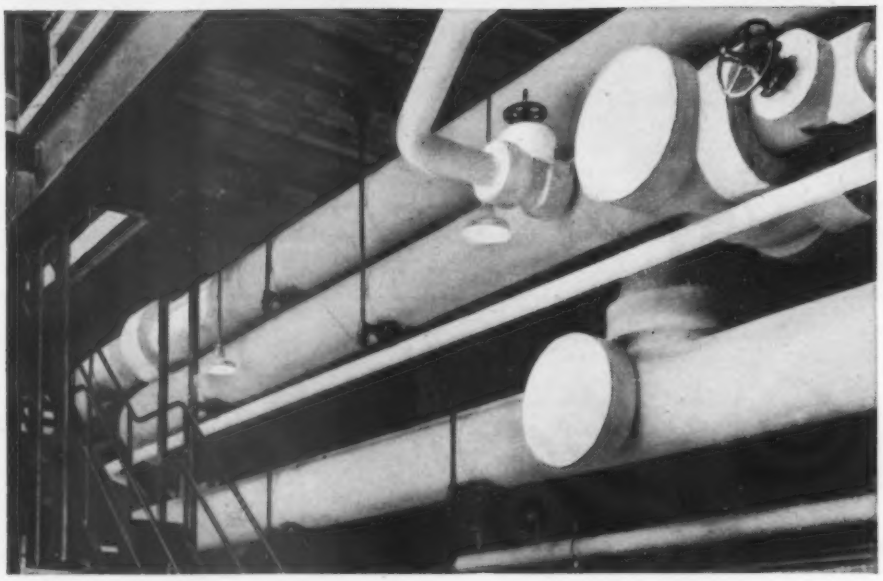
Use Whitney Roller Chains for

- Positive Grip
- Long Life
- Low Maintenance
- High Load Carrying Capacity
- Adaptability and Flexibility
- Transmitting Full Horsepower
- Ease of Installation
- Low Over-All Costs

The Whitney Chain & Mfg. Co.

207 HAMILTON STREET
HARTFORD 2, CONN.

The easy, practical way to cover insulated surfaces



Sewing the canvas — or applying metal strapping — these time-consuming operations are no longer necessary. The canvas, asbestos, fiberglas or other non-conductor can be securely bonded with Arabol Lagging Adhesive.

This adhesive dries in 4 to 6 hours; *leaves a sized finish on the lagging material* . . . the job is completed. No paint need be used on this sized finish, unless you prefer to add one coat for appearance. Maintenance is simplified — grease, oil, soot and dirt wash off easily. And the adhesive is vermin-proof . . . fire-retardant, too.

Arabol Lagging Adhesive has successfully passed rigorous tests by independent laboratories. The results show that it retains its adhesive powers despite exposure to extreme temperatures, to immersion in water and to live steam.

Write us today for detailed facts and figures. Don't place open specifications on lagging work — ask for Arabol Lagging Adhesive. You can depend on it to fill your most exacting requirements for both utility and appearance. Also, ask about our cork cement for adhering cork to cork on refrigerator lines.

THE ARABOL MANUFACTURING CO.

Executive Offices: **110 East 42nd St., New York 17, N.Y.**

CHICAGO—54th Ave. & 18th St. • SAN FRANCISCO—1950 16th St.

ST. LOUIS—2500 Texas Avenue

Branches in Principal Cities

Factories in Brooklyn, Cicero, San Francisco, St. Louis

Adhesives? . . . **ARABOL!**

(*Continued from page* 318)

Abaca comes from a banana-like plant and, unlike hemp fiber which is stripped from the plant stem, is obtained from the structural system of the leaf. It is the strongest natural fiber and is able to withstand abrasion more successfully than the others.

Sisal, the number two fiber in the cordage industry, makes a rope of good quality but not as durable as manila. Millions of pounds of it are used in the manufacture of binder and baler twine. American rope makers get most of their sisal from Mexico, Cuba, Haiti, British East Africa, and the Portuguese colonies in Africa, with a small amount coming from the Bahamas. The Dutch East Indies, an important pre-war source, have not yet resumed their former position in the world fiber market.

The world's largest sisal plantation, the Dauphin plantation in Haiti, covers an area of about 25 square miles and employs about 6,000 natives to cultivate and process the crop for export. Sisal production in Haiti alone for 1947, according to the Department of Commerce, will exceed 42,000,000 pounds.

The soft fibers that provide American homes and industries with practically all the twine they use are hemp and jute. These are not as strong as the hard fiber and are softer to the touch. Both fibers are used to secure large bundles, bags, and bales, while jute is also processed into Hessian cloth or burlap.

Hemp grows all over the world, but Italy, Middle America, and China are the more important sources. Practically all of the world's jute comes from India. Most of the jute crop grows in the new Moslem state of Pakistan and is sent to the Hindustan city of Calcutta for processing into yarn and burlap. However, Pakistan will probably develop its own shipping port at Chittagong. United States consumption of burlap, in spite of current high prices, is expected to exceed 1,000,000,000 yards in 1947, compared with 905,000,000 yards in 1946.

Cordage manufacturers also use limited quantities of other plant fibers for special ropes and twines, or products that are not in general demand. One of these fibers, called coir, is made from the husks of coconuts. Most of the coir consumed in the United States comes from India and the Islands of the Pacific. It is a weak fiber, but has remarkable buoyancy and does not rot as easily as other fibers.

Mexico produces a fiber called tampico which is used to some extent by the cattle industry. Tampico goes into a coarse, heavy hand-made rope that is preferred by cowboys for certain purposes.

YOU WILL FIND NEW SUPPLY-SOURCES LISTED EVERY MONTH IN PURCHASING'S CLASSIFIED SECTION! SEE PAGE 342

New basic benefits for your products

new ease of fabrication, too!

SuVeneer T.M. REG. U.S. PAT. OFF. COPPER CLAD STRIP

The strength of steel...plus many advantages of copper

Low carbon, deep drawing steel—clad on one or both sides with a 10% thickness of solid copper*, and available in all tempers common to unclad low carbon strip.

Check these specific SuVeneer Copper Clad advantages: Tensile strength (annealed) 1½ times solid copper; yield strength, nearly 3 times greater. Ductility, almost equal to solid copper. Corrosion resistance, equal to copper. Weight, 10% lighter than pure copper. Modulus of elasticity: close to steel, twice that of copper.

And, non-sparking—not subject to season cracking—permanently bonded—can be spun, drawn, stamped or shaped by any customary methods. Furnished in coils or cut lengths. ●*Let us consult on your appropriate applications.*

*Gilding metal (95% copper—5% zinc) and commercial bronze (90% copper—10% zinc) also available.

Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

for COLORFUL TRADEMARKS
TRUCK LETTERING • PICTORIALS
PRODUCT DECORATIONS

MEYERCORD DECALS

WINDOW SIGNS • VALANCES

COLORFUL DECAL SPOT WINDOW SIGNS SPUR SALES AT POINT-OF-PURCHASE

Meyercord Decal signs do a colorful selling job on dealer store windows, back-bars, mirrors, counters and doors. They're durable, washable and can be produced in any colors or size. Write for brochure illustrating use of Decal Signs.

DECALS OFFER DURABLE LOW-COST IDENTIFICATION

Decal trademarks, operating instructions, patent data, etc., are easily and quickly applied on any commercial surface—in any colors or size desired. Simple Meyercord adhesive methods are adaptable to high speed production lines. Free technical service on request.

Every Business Can Use Meyercord Decals

TRUCK DECALS CONVERT "COST-FREE" PANEL SPACE OVERNIGHT INTO MOBILE BILLBOARDS

Economical for a dozen trucks or a thousand! Overnight application saves out-of-service loss. Investigate the advertising value of Meyercord's weather-tested, durable Truck Decals. Write for brochure.

COLORFUL DECAL DECORATIONS STEP-UP PRODUCT EYE APPEAL

Hundreds of stock designs are available. Exclusive designs on request. Easily applied at a fraction of hand-painting time and cost on wood, metal, plastic or glass. Washable. Durable. Write for free decorating information.

ADVERTISERS! FLEET OWNERS!

A limited supply of these Meyercord Decal Window Sign and Truck Decal full-color brochures are available free to executives concerned with advertising and fleet operation. They show how and where to use Decals. Mention brochure desired when writing. Company letterheads, please. Address Department 61-2

Founder-Member Lithographic Technical Foundation

The MEYERCORD Co.
World's Largest Decal Manufacturer
5323 W. LAKE ST. - - - - - - - - - - CHICAGO 44, ILL.

HUGE INCREASE IN EXPENDITURES FOR INDUSTRIAL RESEARCH

An increase of 270 percent in anticipated expenditures for industrial research during 1947 over the pre-war year of 1939 is shown by manufacturers replying to its Patents and Research Committee's questionaire, the National Association of Manufactuers, New York, N. Y., announces.

Many of the companies reported that their 1939 anticipated research expenditures are more than ten times what they spent for this purpose in 1939. The amount expected to be spent for research in 1947 by the reporting manufacturers also is 14 per cent higher than the total expended by them in 1946.

"Replies to the questionnaire show the importance that is being given to industrial research by American manufacturers," Howard E. Blood, chairman of NAM's Patents and Resarch Committee said. "Replies were received from 983 companies, 750 of whom reported that they carry on a research program. Those answering were anxious to ascertain the general patterns both in industrial research and patent practices and it is believed that the survey will be of material assistance to manufacturers in helping to guide them in formulating their program."

Among the facts brought out by the survey is that many companies reported that they are spending a larger proportion of their gross sales on industrial research than before the war. However, all concerns reporting that they carry in a research program show an average ratio of research expenditures to estimated sales for 1947 of 1.6 per cent, as compared with 1.86 per cent for 1939.

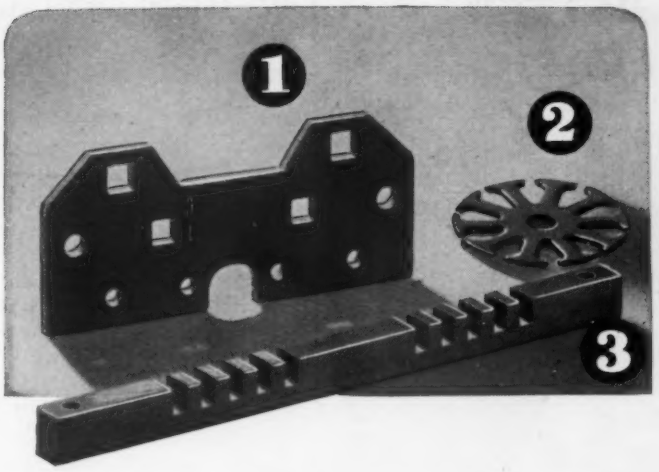
The results of the survey will be given in a forthcoming publication entitled, "Trends in Industrial Research and Patent Practices."

PLYWOOD DEMAND EXCEEDS SUPPLY

The demand for plywood continues to exceed supply, according to Lawrence Ottinger, president of the United States Plywood Corporation, New York, and the gray market still persists. Additional plants are being built, some of which will come into production early in 1948 and some not until the end of the year. The total new production is not likely to expand present facilities by more than approximately 10 percent.

Basic prices at the mills have advanced considerably during the year due in part to higher prices for timber and labor. The extremely high prices demanded by distributors, legitimate and illegitimate, he stated, have had their effect upon mill prices since manufacturers seem less inclined to hold their prices down if in so doing they are not benefitting the ultimate consumer.

If the anti-inflation bill recently signed by the President, will permit the manufacturers as a group to limit resale markups, he declared, a sharp reduction in the price of lumber and plywood to the consumer is likely to result.



ACCURATELY-MACHINED PARTS . . . *quickly and easily made with*

TAYLOR LAMINATED PLASTICS

THE VERSATILITY of Taylor Laminated Plastics makes possible the fabrication of parts with structural, mechanical, and electrical properties to fit almost any engineering problem involving the mass-production of small, accurately-sized parts.

The three parts illustrated above, for example, selected at random from thousands of such parts being turned out daily in the modern Taylor plant, involve two different types of Phenol Fibre and one of Vulcanized Fibre. **No. 1** is a switch back machined from Phenol Fibre and having excellent moisture-resistance and electrical properties. **No. 2** is an end lamina for a fractional horsepower motor, punched and formed from Vulcanized Fibre. **No. 3** is a coil bar support for a secret electronic device which is sawed, milled and drilled from Phenol Fibre having especially good insulating qualities and mechanical strength.

If your production problem involves great quantities of parts with light weight, great strength, and special insulating or dielectric qualities, let our engineers tell you what Taylor can do for you.

Write us Today!

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LAMINATED PLASTICS: PHENOL FIBRE · VULCANIZED FIBRE
Sheets, Rods, Tubes, and Fabricated Parts
NORRISTOWN, PENNSYLVANIA • OFFICES IN PRINCIPAL CITIES
PACIFIC COAST PLANT: La Verne, California

FOR BETTER LUBRICATION

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LUBRIPLATE DEALER

LUBRIPLATE Lubricants are sold by authorized dealers. This is a protection to LUBRIPLATE users for it is the responsibility of the dealer to see that only the proper LUBRIPLATE Product is used for the specific job. There is a LUBRIPLATE Lubricant for practically every application. Ask the LUBRIPLATE Dealer. It is his job to reduce your operating costs through better lubrication. For his name consult your classified phone book.

℞ FOR YOUR MACHINERY

No. 2 — Ideal for general oil type lubrication, ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 8 — Because of high film strength and long life it reflects outstanding performance in most types of enclosed gears (speed reducers).

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No. 70 — For a wide range of grease applications, especially at temperatures above 200 degrees F.

No. 130-AA — Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING — This is the LUBRIPLATE Lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.

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FISKE BROTHERS REFINING CO.

NEWARK 5, N. J. TOLEDO 3, OHIO

DEALERS FROM COAST TO COAST

CONSULT YOUR CLASSIFIED TELEPHONE BOOK

We Must Buy If We Would Sell

(*Continued from page* 128)

economic reconstruction is to succeed. Without economic rehabilitation there can be no semblance of peace in the world.

We can have a justifiable pride in the far-sightedness evidenced by some of our American industrial leaders in meeting the responsibilities of our present world position. We learn with keen satisfaction, for example, that the Westinghouse Electrical International Company has, with characteristic vigor, formulated plans to translate into positive action the maxim: we must buy if we would sell.

It is reported that Westinghouse's imports are running about double those of 1946 and it is anticipated that there will be another 100% increase in 1948. It is heartening to observe that one of the largest exporters of electrical equipment in the world recognizes that international trade is a two-way proposition.

The plan seems to be operating along two basic lines; the importation of the kinds of goods and materials Westinghouse uses in its own products, and the kinds of goods used by other industries or consumers in this country. The consumer goods are selected with a view to their scarcity here and their noncompetitive nature. The essential materials include mica, chrome ore, lead, zinc, etc. Food stuffs include products not grown or processed here. A special department has been established for the importation and distribution through normal trade channels, of consumer luxury goods such as Italian hand-tooled leather, alabaster, and gift and novelty items. Another department handles special imports such as English prepared clay for tennis courts to be sold to court contractors, tropical lumber to supplement the diminishing domestic supply of persimmon and dogwood for commercial and agricultural uses. A procurement group services the imports from foreign countries to the domestic buyer. Importations are currently being purchased from Newfoundland, England, Italy, Belgian Congo, Peru, Brazil, South Africa, and China.

Here we see one of the world's largest producers and exporters of electrical equipment engaged in what, at first glance, might seem to be a most unusual and alien activity. But on closer scrutiny it is a practical, realistic program of helping the customers who buy the Company's products. That is characteristic of American initiative and common sense.

On a wider scale, the results of the International Trade Conference at Geneva must be buttressed by American industry's own vigorous activity, with a minimum of government interference. The pattern is clear-cut. If we import more we shall have constantly expanding markets and will provide our foreign customers the means of paying for what they buy from us. It is enlightened self-interest to get our export trade-balance in line. The Westinghouse formula is one way of doing it. We must buy if we would sell.

* * *

Pricing Policies and The Purchasing Agent

(*Continued from page* 122)

chasing agent knows at the outset that unless a vendor is doing something about applying the principles discussed, there may be reason to question the latter's operation standards. Moreover, if the vendor is without a pricing policy that would definitely put him in the class of the job-makers, there is reason to suspect that he is just another operator going through some stage of the old boom-and-bust routine.

If there are enough of the others, the job-makers, that belong at least in spirit with the blue chip organizations, to minimize the effect of the thousands of job-destroyers, things might remain on a more or less even keel, following along on a healthy downward movement of prices. If there are not, the boat may one of these days rock a good deal harder than it is rocking now. Perhaps the purchasing agent may turn out to be capable of doing an important bit of selling, that will serve to help steady it.

IS YOUR PURCHASING DEPARTMENT UNDERSTAFFED? YOU CAN FIND JUST THE MAN (OR WOMAN!) YOU ARE LOOKING FOR BY GLANCING THROUGH THE CLASSIFIED COLUMNS . . . UNDER "POSITIONS WANTED".

SEE PAGE 342

SWIFTLY... *AND SAFELY*...THROUGH THE MILES

As your train speeds smoothly along, every mile of your journey is safeguarded by marvelous signal and control systems . . . making a day's travel by rail as safe as a day at home.

Along thousands of miles of American railways, Exide Batteries are supplying power for track and signal circuits, highway crossing lights, telephone and telegraph systems, and other departments of signal service. Exide Batteries also furnish power for passenger car lighting, air-conditioning and the cranking of Diesel-electric locomotives.

There are Exide Batteries for every storage battery need. They supply motive power for time-and-cost saving battery electric trucks . . . Exide Batteries power mine locomotives and shuttle cars. They are used by radio stations, on ocean vessels and airplanes, in municipal fire alarm circuits. And on millions of cars they provide daily proof that "When it's an Exide, you start."

For 60 years the name Exide has stood for dependability, economy and long life. Information regarding the application of storage batteries for any business or industrial need is available upon request.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
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Buy with confidence

National SANITARY SUPPLY ASSOCIATION MEMBER

from the Janitor Supply House
DISPLAYING THIS EMBLEM!

Not only is The NATIONAL SANITARY SUPPLY ASSOCIATION Member able to supply everything you may need in sanitary supplies, cleaning equipment, sanitary chemicals, etc., but his knowledge, acquired through years of ***specialized*** Sanitation and Maintenance experience, is at your command and may prove helpful to you in speeding up your cleaning and sanitation program; may help you ***save time*** and ***money.***

We are sure you will find it both PLEASANT AND PROFITABLE to consult a NATIONAL SANITARY SUPPLY ASSOCIATION MEMBER about any of your cleaning, maintenance and sanitation problems.

NATIONAL SANITARY SUPPLY ASSOCIATION
(INCORPORATED NOT-FOR-PROFIT)
National Headquarters 139 North Clark Street, Chicago 2, Ill.
Leo J. Kelly, Executive Vice-President

Seats every worker
RIGHT—for every Job!

You are sure of "height that's right" for every worker when you choose Kewaunee Automatic Adjustable Chairs and Stools. That extra comfort feature has a definite effect on production by lessening fatigue. Split-second adjustment to the right height is made automatically by the worker. Lifting the seat locks it firmly at desired height. No fussing with screws, bolts or tools.

Kewaunee
AUTOMATIC ADJUSTABLE CHAIRS and STOOLS
4 HEIGHT RANGES—12-15", 15-20", 18-26", 24-35"

Why not keep your personnel at the proper level for peak production? We'll send you a Kewaunee Chair or Stool on a 30-day trial at no cost or obligation. Write for circular and full details.

C. G. Campbell, President
KEWAUNEE MFG. CO., 5206 S. Center St., Adrian, Michigan

Reception Room Booklets

(*Continued from page* 116)

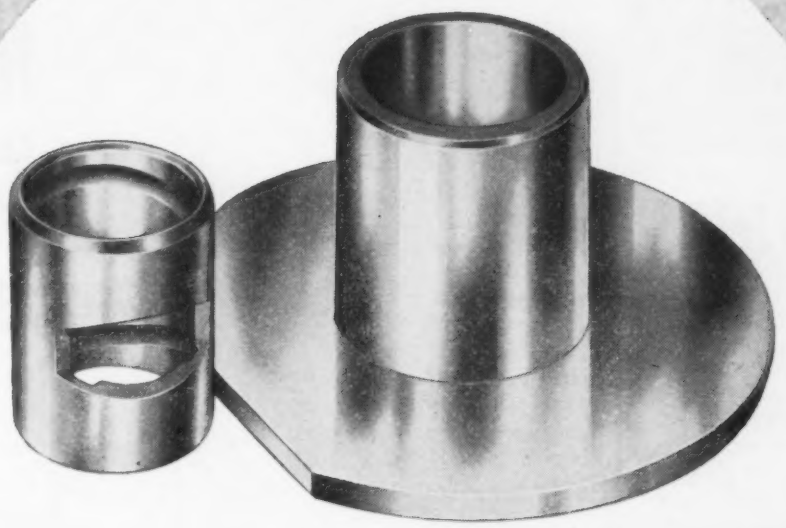
composite photograph of typical Starrett products appears on the back fold.

While somewhat different in technique than the reception room booklet idea, mention should be made of the welcome message that has for many years been hanging near the receptionist's desk in the lobby of the Meredith Publishing Company at Des Moines, Iowa. There is strong reason to believe that the Meredith plaque is the "daddy of them all" in respect to putting this idea of company hospitality and friendliness into concrete form. In any event, it was a pioneering move. It has been a fixture for so long that it is impossible at this date to trace its origin or to give the proper personal credit either for authorship or for the idea of putting it on display.

The lobby is amply furnished with comfortable chairs, and is attractively hung with original cover paintings used on the company's publications, Better Homes & Gardens and Successful Farming. The reception desk is located just inside the main entrance, and over it hangs this greeting:

Rest, traveler . . . yourself and your story are welcome. Do not hesitate to ask when you can see your man, or ask a second or third time if necessary. Our Information Desk is an agency of Service."

Over the years, this simple message has created such a favorable impression, and was so often copied by business callers, that some years ago the company printed extra copies for distribution on request, so that the same legend can now be found in many reception rooms throughout the country. It has been instrumental in earning for the company a far more than local reputation for courtesy and friendliness. That reputation is backed up in company policy and performance. Occasionally the company is asked for an outline of policy, the regulations or code of "do's and don'ts" that govern the handling of salesmen and other visitors. No such code exists; the treatment of business callers is simply a reflection of the spirit of friendly, informal courtesy that has been built up throughout the entire organization. The most effective answer to such requests is an invitation to have the receptionist spend a day at the Meredith offices making personal observations.



Standardize for Saving

Bunting Cast Bronze Bearings are available in two general types—the Bunting Standard Stock Bearing (822 sizes) and Bunting Special Bronze Bearings—tailored to your design and alloy.

Which from your view point is more desirable depends on several considerations. Can you use our standard alloy Bunting No. 72 (S.A.E. 660) or is a special alloy indicated. Can you use our stock dimensions and tolerances or does your design require a special bearing made expressly for you? Are your quantity needs moderate? If so, the Bunting Standard Stock bearing offers you the benefit of other's volume. Are your quantity needs substantial? If so, a special Bunting Bronze Bearing will cost no more than a Standard Stock Bearing.

One thing to remember about Bunting Bronze Bearings is this—your design is not penalized by a standardization for some other industry. Some bearing types have standardized to suit one industry and force other industries into straight-jacket designs, but Bunting Bronze Bearings offer freedom and latitude for the design needs of every industry. The Bunting Brass & Bronze Co., Toledo 9, Ohio. Branches in Principal Cities.

Bunting

BRONZE BEARINGS • BUSHINGS • PRECISION BRONZE BARS

82

GRAY IRON
CASTINGS
S. A. E. OR A. S. T. M.
CLASSES 20—30—40

2 FOUNDRIES
on 2 main line railroads

equipped for fast, efficient production to meet your casting requirements.
Special facilities for rollover and cope-and-drag production to 150 pounds. Other castings up to 1000 pounds.
Send us your inquiries or ask for a representative to call to discuss your casting requirements.

TYPICAL FOREST CITY CASTINGS
(unretouched photos)

THE FOREST CITY FOUNDRIES COMPANY
2500 WEST 27TH STREET
CLEVELAND 13, OHIO
Phone PRospect 5040

As Others See Us

(*Continued from page* 118)

containing eight words and a signature:

"Dear Sir:
Perhaps you are right.
Yours truly,"

This seems to preserve peace at all times. Aside from the spoofery it contains, we would do well to learn a lesson from this. Admission of the other fellow's right to have an opinion goes a long way to settle controversies in *our* favor.

9. When in doubt, don't dictate. Get the facts and have a clear understanding before you start a letter. *Never* dictate in anger. In a controversy, if time will permit, delay your answer for twenty-four hours. There is an old proverb to the effect that a head rests more easily after it has slept on a problem. Procrastination is an unpardonable sin in our Purchasing Department, but some letters answer themselves and others are better unanswered.

10. Write "thank-you" letters and letters of praise at every opportunity. These paper orchids pay big dividends the next time you expedite. Make as many friends as you can—there will be a day when you will need them. When we send out the firm's Christmas cards you will be expected to pen a personal note or greeting to all your contacts. The postage on the Christmas cards remains the same regardless of how many personal words you add, but the return in goodwill is twenty-fold.

11. The buyer is always right except in times of shortages and in firms where reciprocity is practised. In our company we want to impress you with the fact that you can buy goodwill in every transaction, and this abstract commodity is paid for by your conduct.

12. Channing Pollock once said, "You'd be surprised how you can win friends and influence people if you know what you are talking about." The Boy Scouts say about the same thing in "Be Prepared."

* * *

Cataloging As An Aid To Standardization

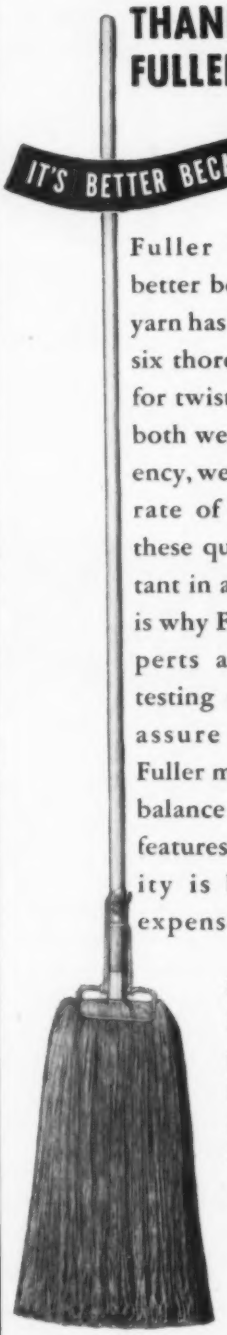
(*Continued from page* 144)

Catalog which followed its initial publication took the form of individual supplements or departmental catalogs for the principal participating agencies. These departmental catalogs listed, in each case, only the general supplies of the agency for which issued. Interdepartmental uniformity was maintained as to

a Better WET MOP
THANKS TO FULLER RESEARCH

IT'S BETTER BECAUSE IT'S TESTED

Fuller Wet Mops are better because the cotton yarn has been subjected to six thorough tests... tests for twist, tensile strength, both wet and dry, absorbency, wear, shrinkage, and rate of absorption. All these qualities are important in a good mop. That is why Fuller research experts are continuously testing cotton yarns — to assure you that every Fuller mop has the proper balance of these essential features. No single quality is built up at the expense of another...



So, for the best in industrial mopping, get the scientifically developed mop — the Fuller Cotton Industrial Wet Mop.

TELEPHONE your Local Fuller Branch Office or write
The FULLER BRUSH Co.
INDUSTRIAL DIVISION
3554 Main St. • Hartford 2, Conn.

classification, stock numbers, and nomenclature. The period of the second World War brought about both the marked expansion of some of the departmental catalogs in use and the extension of the Federal Standard Stock Catalog system to some agencies where it had not been previously used.

By Presidential letter to the Director of the Bureau of the Budget, early in 1945, that agency was given control over the cataloging of supplies for the Federal Government.

Serviceability of the Catalog System to Purchasing and Storekeeping in General

The system of cataloging which has been described, while developed to meet the needs of Federal Government agencies in procurement, storage, and issue operations, is applicable to the solution of problems which are perennial in the work of purchasing and storekeeping in the industrial and commercial fields.

The advantages of a standardized designation and positive identification for each item, inseparably associated with it at every step from the requisition for purchase until the final issue for utilization and the incidental accounting procedures, are palpable in all phases of purchasing and storekeeping.

The use of standardized stock records, correlated with the applicable purchase specifications, will serve to simplify and facilitate the work of the purchasing agent at every step. In the requisition which carries to the purchasing agent the record of material to be procured, reference by number and nomenclature to a standard item will obviate the necessity for formulating anew, in each case, a description of what is required, sufficiently full and thorough to serve as the basis for purchase. With such an investigation once made for the purpose of cataloging the commodity, mere identification with the appropriate standard item is sufficient.

Abridgments of standard nomenclature, adapted to the purpose immediately in view, may be used. The complete identification is always definitely associated with all records of each item. The resulting advantage is even greater where it is desired to conform in purchase to standard specifications, whether those of the Federal Government, of municipalities, of non-governmental standardizing agencies, or of industrial corporations. Unless the formulation of requirements for

(*Please turn to page* 330)

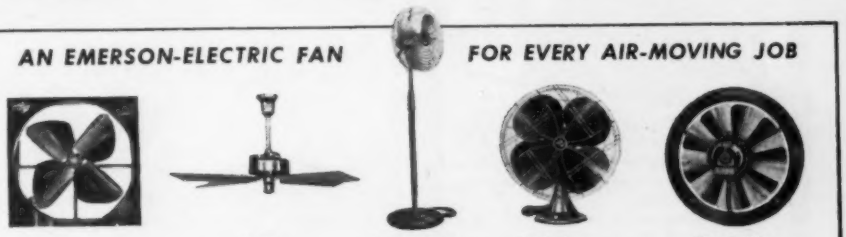
Step up the efficiency of your factory or office by providing frequent air changes. Keep Air in Motion to keep people active.

For years, dependable Emerson-Electric Ventilating and Exhaust Fans have contributed to the healthful comfort of indoor people, in all walks of life. Good air is good business.

See your electrical supplier for the proper Emerson-Electric Ventilating equipment to fit your needs. Or write for free Exhaust and Ventilating Bulletin No. T-48 today.

Typical Installation of Emerson-Electric Direct-Drive Exhaust Fans

AN EMERSON-ELECTRIC FAN FOR EVERY AIR-MOVING JOB



Belt-drive Exhaust Fans | Ceiling Fans | Powerful Air Circulators | Desk Fans, All Types | Direct-drive Exhaust Fans

62

THE EMERSON ELECTRIC MFG. CO., ST. LOUIS 21, MO.

EMERSON ELECTRIC

MOTORS · FANS — APPLIANCES

1/3 LONGER LASTING

SPUN-DERMA-C Hand Cleanser

- *Faster Cleaning*
- *Better Hand Protection*
- *Lower Final Cost*

Here's the powdered cleanser that costs less to use and does a better job. By every test in over 150 major industrial plants, Spun-Derma-C removes dirt, grease, oil, tar, paint, ink, etc., without harming the most delicate hands and lasts up to 1/3 longer. Each of its 7 carefully blended elements serve a specific function: combatting dermatitis, preventing chapping, scrubbing without abrading, restoring natural skin oils. Use in any standard dispenser. Meets all Federal and State requirements . . . passes every safety engineering test. Write for information.

"Guarding the Hands of Industry"

Spun-Derma-C HAND CLEANSER
L. E. HICKS & SON, INC.
CHEMISTS
511 S. Grove Ave. Oak Park, Ill.

FREE CATALOG

You'll find the SALESMAN'S SAMPLE CASE you're looking for in this Catalog. Send for it—it's FREE!

If it's not in the catalog, we'll design it for you.

Write for Catalog 110 today!

FIBRE PRODUCTS MFG. CO.
30-32 WEST 13th ST., N. Y. 11

Cataloging As An Aid To Standardization

(*Continued from page 329*)

nomenclature used in inviting quotations are safeguarded, the nominal adoption of standard specifications will be largely nullified in practice. The use of standardized cataloging is, therefore, a factor of prime importance in the realization of the maximum advantage from the use of standard specifications.

The importance of cataloging as a means of enabling designers and drafting staffs to keep the material requirements specified by them in step with standard specifications has been pointed out already. Where purchases are made for individual projects, the work of the purchasing agent is thus greatly facilitated. Where stocks of materials are carried, there is further advantage in that the most effective utilization of such stocks is thus made practicable.

WAA SURPLUS MACHINE TOOL DISPOSAL IN FINAL PHASE

Disposal of war-surplus machine tools moved into its final phase recently when War Assets Administration instructed its field offices to begin competitive bid offerings at various locations as soon as tools are screened for the national stockpile and are adequately offered at fixed prices.

No new large offerings of surplus machine tools have been made by WAA since October 1, 1947, although some sales programmed before that date have been continued. The halt on new offerings was called to allow the Joint Army and Navy Machine Tool Committee to screen and tag tools wanted for the industrial reserve.

JANMAT selections from all storage locations will not be complete for some months, but under WAA's instructions sales will be conducted immediately after completion of tagging at each of the warehouses.

After JANMAT selections at a specific location, a 45-day inspection period will be provided to accommodate all classes of prospective buyers. Priority purchasers may buy individual items as fixed prices during the first 15 days of the inspection period. During the last 30 days of the period, unsold tools will be offered at fixed prices to all buyers and, at the same time, bids will be accepted, but awards on bids will not be made until expiration of the 45-day period.

Any residual stocks after fixed price and competitive bid sales, where quantities are large enough, will be offered in car-load lots to all classes of bidders.

As of December 1, 1947, about $1,000,000,000 worth of surplus machine tools out of acquisitions of about $1,320,000,000, had been sold to commercial users, donated to schools and institutions for training purposes, or returned to the national stockpile by WAA.

BEALL Spring WASHERS

Bolted assemblies *stay* TIGHT *permanently*

BEALL SPRING WASHERS, with live, long-range action compensate for ALL causes of looseness including vibration, bolt stretch, wear, rust and break-down of finish under the nut and bolt head.

IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur and Duronze.

BEALL TOOL DIVISION (HUBBARD & CO.)
160 Shamrock St. EAST ALTON, ILL.

SPECIALISTS IN

FOLDED EDGE ELECTRICAL KRAFT

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PRECISION DIE CUTTING OF ELECTRICAL PAPER PARTS

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PRECISION DIE CUTTING OF PRESSURE SENSITIVE TAPE

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Your inquiries will receive our prompt attention.

Phone: MARKET 2-7076

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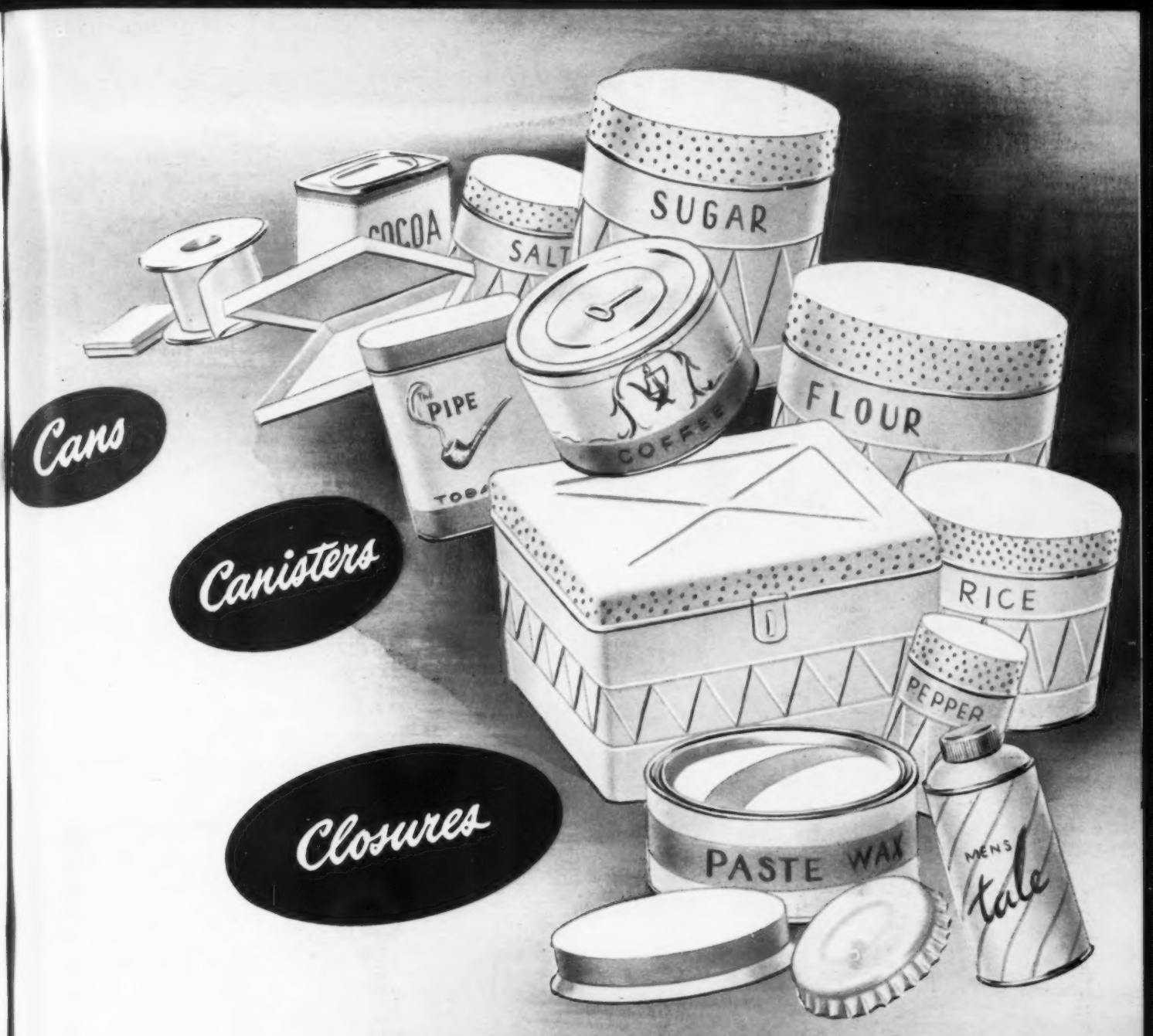
34-36 MERCER ST.
NEWARK 3 NEW JERSEY



and light metal products of varied kinds are produced most economically from .....

WEIRITE

Electrolytic Tin Plate

WEIRTON STEEL COMPANY

WEIRTON, W. VA. *Sales Offices in Principal Cities. Division of*
NATIONAL STEEL CORPORATION *Executive Offices, Pittsburgh, Pa.*

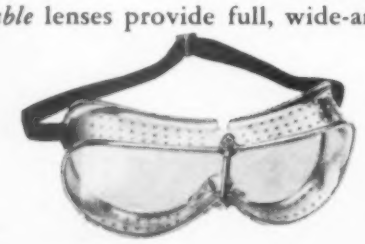
WEIRTON STEEL COMPANY

"PANORAM"

. . . an inspired name for a wide-vision SAFETY GOGGLE

. . . and this AO Product is better than its Name!

This popular plastic goggle pleases both the worker who seeks sure protection *over* his prescription glasses and the man who needs protective goggles *only*. The *replaceable* lenses provide full, wide-angle vision and with the lightweight frames, may be had either clear or in green acetate. There's overall comfort in frames closely conforming to forehead and face . . . a bridge which fits any nose without irritation or pressure . . . eyecups vented to reduce fogging of lenses. Your nearest AO Representative can give you full information about the Panoram Goggle for combating hazards common to chipping, grinding, riveting and similar operations.



American Optical COMPANY *Safety Division*

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

CHEMICALS

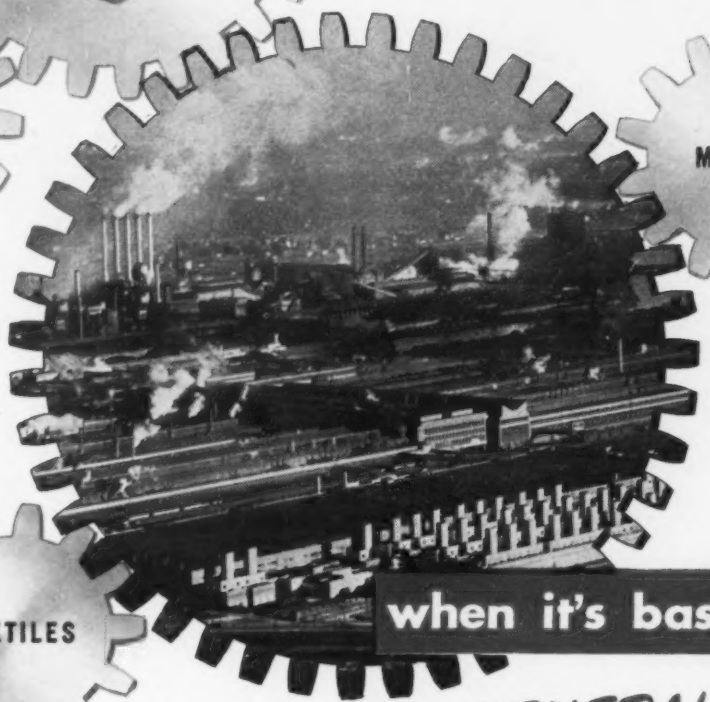
GEARED TO THE NEEDS OF INDUSTRY

PAPER

METALS

WATER & SEWAGE

LEATHER



TEXTILES

PETROLEUM

SOAP

GLASS & CERAMICS

DRUGS

when it's basic chemicals

...call on GENERAL CHEMICAL first!

General Chemical's Sales and Technical Service organizations work shoulder to shoulder with Industry . . . constantly alert to changing chemical demands in every field. Closely coordinated with them are General's progressive research program, and extensive—yet extremely adaptable—production facilities.

This way, General Chemical products are always geared to the needs of Industry . . . their grades and strengths meeting the most exacting requirements of the day. From such closely meshed efforts are coming General Chemical's new organic and inorganic chemicals for the process industries of tomorrow. The past stands proof that these, too, will be equally essential "Basic Chemicals for American Industry."

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ALLIED CHEMICAL & DYE CORPORATION
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Sales Offices: Albany • Atlanta • Baltimore • Birmingham • Boston Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia Pittsburgh • Portland (Ore.) • Providence • San Francisco • Seattle • St. Louis Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

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BASIC CHEMICALS

FOR AMERICAN INDUSTRY

Jaws close parallel, like a vise, hold tight, with pressure evenly distributed . . . Parallel jaws serve as wrench, fit snug, won't slip . . . Cutters on *outside* of head—easy, quick to use.

Ask your mill supply jobber

SPECIAL PLIERS for SPECIALIZED HAND OPERATIONS

In addition to our dozens of standard BERNARD Plier models we supply industry with pliers specially adapted or designed for special hand operations. These often accomplish great saving of time and effort. We'll be glad to study your problem.

#102
4½", 5½", 6½", 8" sizes
Also longer nose style #402

Descriptive literature on request.

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WM. SCHOLLHORN COMPANY, 86002 Chapel Street, New Haven 9, Connecticut

MOTOR VEHICLE REPLACEMENT

The problem of motor vehicle replacement was described as one of applied economics at the annual meeting of the SAE in Detroit, Mich., by Professor Joel Dean, of Columbia University, New York, N. Y. He stated that the decisions on the replacement of motor trucks are more closely related to a company's budgetary control of internal investments than to such factors as age and mileage, depreciation, or outmoded appearance. Insisting that replacement is an economic rather than a technical problem, Professor Dean recommended that cost savings as a ratio of required replacement investment be recognized as the economic criterion.

Professor Dean outlined effective replacement tests, to be made when major overhaul is contemplated, maintenance costs rise drastically, dramatic new models become available, or market prices of used trucks turn downward. He proposed the preparation of graphs for both old and new vehicles to permit study and comparison of single and combined cost curves of capital wastage, maintenance, operations, and unreliability.

"The point of economic replacement," he explained, "is determined by prospective cost savings from replacement as a percentage of the net capital expenditure required to obtain these savings."

Maintenance Program

Detailed plan and services for preventive maintenance, repair, and replacement of parts in commercial motor vehicles on a basis of life expectency were described by W. J. Cumming, of The White Motor Co., Cleveland, Ohio. Mr. Cumming said that a 10-year study of vehicle operation over nearly 90,000,000 miles has revealed that 34 per cent of total unit delays are occasioned by difficulties with electrical systems, 12 per cent by engine troubles, and 10 per cent by fuel system failures. He suggested that maintenance operations be placed in five groups, based upon mileage and life expectancies, so that lubrication takes place every 2,000 miles, inspection and adjustments every 4,000 miles, and that repair and replacement operations be undertaken on regular schedules of 20,000, 40,000 and 50,000 miles, or otherwise as determined by operating requirements and experience.

* * *

STANDARD FOR COLORS FOR MOLDED UREA PLASTICS

Commercial Standard CS147-47, Colors for Molded Urea Plastics, is now in preparation at the National Bureau of Standards. Standard samples of the colors are available from the Plastic Materials Manufacturers Association, Room 731, Tower Building, Washington 5, D.C., in complete sets of 17 colors for $2.50, remittance to accompany order. The spectrophotometric data on the standard colors, required primarily for record purposes, are not yet complete, but will appear in the commercial standard, to be issued shortly.

...Style

...STRENGTH

...SALES

AT NO EXTRA COST

...in SET-UPS

Yes, the three "S's" of better packaging are custom built into every set-up box at no extra cost. It's these three features . . . *Style* through attractive shapes, color contrasts, new design and product identification . . . it's *Strength*, as an intrinsic part of the stayed corner principle of set-up boxes which are built to take rough handling . . . it's greater product *Sales* with greater display area and better sales appeal. These all add up to economical packaging and shipping. Consult your nearest set-up box manufacturer about your packaging, for with the three "S's" of Style, Strength and Sales, you will be rewarded with economical packaging.

FOR INFORMATION OR SERVICE..... CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

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Exclusively Holo-Krome! Continuous Fibres running from end to end — uninterrupted, unbroken and unsevered! Accomplished exclusively by the Holo-Krome patented method of Completely Cold Forging and sold thru Holo-Krome Industrial Supply Distributors under the registered trade mark name "FIBRO FORGED" Socket Screws . . . Specify "Holo-Krome" and get these guaranteed unfailing performance Socket Screws.

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For tape widths up to 3 inches

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- Patented Speedy Tape Measuring and Stop Adjuster save up to 50% on gummed tape.
- New Floating Automatic Pressure Control Weight over brush gives correct, uniform, end-to-end moistening for maximum safety in sealing cartons.
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Order the Lewis today. Try it for 5 days. If not completely satisfied, return it and we will pay the freight.

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For the best of the month's offerings, see page 14 of this issue. Check off what you want on the business reply card at the bottom of page 19, mail to us.

When we asked a cross section of PURCHASING readers to rate the articles and features of a typical issue in order of their importance, the Free Informative Literature Section proved to be well in the first division.

Your catalog file will always be up to date if you cultivate the excellent habit of looking over the free literature offerings each month, and letting PURCHASING obtain for you what you want.

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Ball Bearing
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Because -

- They offer more flexibility in power planning.
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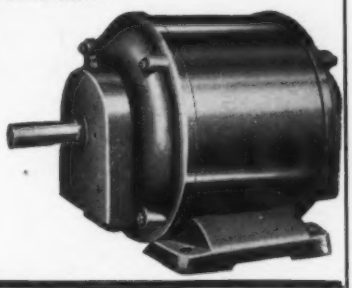

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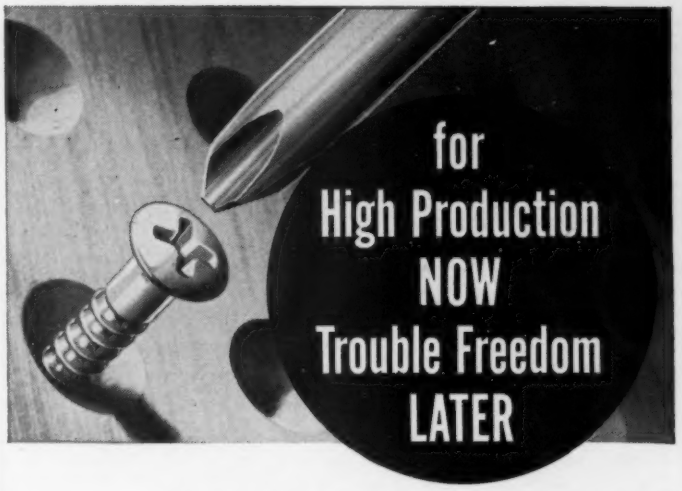

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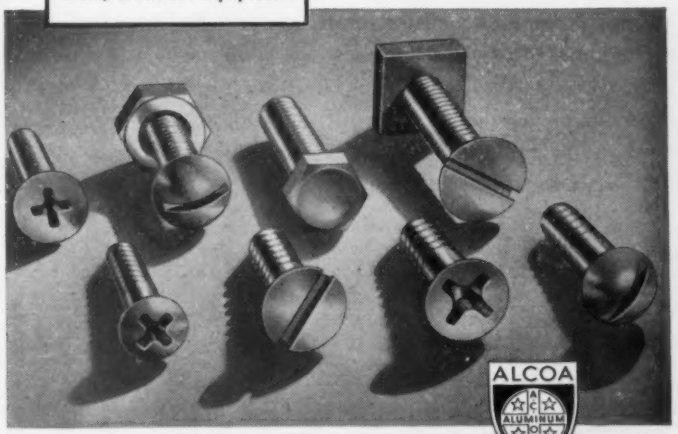
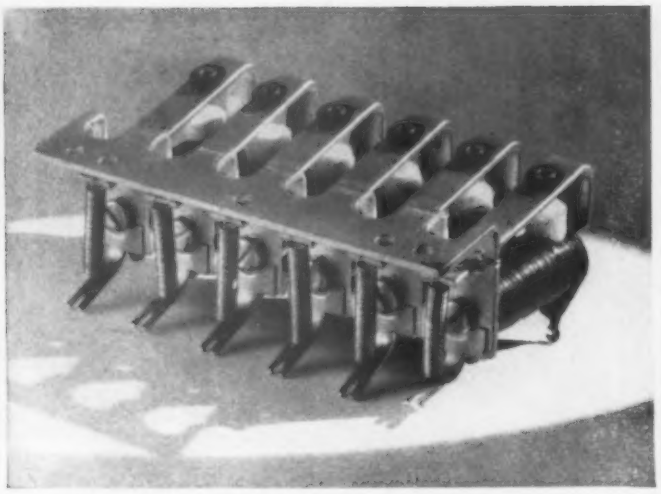
ALUMINUM COMPANY OF AMERICA, 619 Gulf Building, Pittsburgh 19, Penna. Sales offices in principal cities.

FOR FASTENING OTHER MATERIALS, TOO!

Wherever you seek corrosion resistance in a fastening, rely on Alcoa Fasteners; in metal, wood, plywood, plastics, outdoor equipment, electrical equipment.



ALCOA *Aluminum* FASTENERS



● Spring-actuated electric coil assembly for electric organ (a typical Reliable Spring application.)

Why not take time to design the RIGHT SPRING?

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"Quality" and "service" are overworked words in the vocabulary of business. Yet—Reliable is one concern that really tries to make them *mean* something, not only in advertising, but in the products we turn out. Reliable will go a long ways to take the time and trouble to work out, with you, the very finest spring, at the minimum cost, to suit your particular purpose. That method of doing business has obtained, and held, many of our oldest customers. You may be astonished how often even *limited* study clearly indicates the wisdom of basic changes in design, material, weight, finishes, etc. On any problem of springs, stampings, or wire forms, you will find that Reliable men "know what it's all about." We keep our whole organization on its toes to serve you, and our production facilities right up to the minute for fast, economical, high precision work. Why not give us a crack at one of your *worrisome* jobs—and see how we operate?

Your Reliable representative nearest you is always ready to cooperate. Write for bulletin "Specifying for Economy in Springs".

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ROUND AND FLAT WIRE SPRINGS · CLIPS · HOOKS · BENDS · LIGHT STAMPINGS

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All over America shippers know Orange Core sealing tape. They like its speedier, stickier, sturdier quality . . . the way it steps up production and protects shipments. Orange Core will do a better job for you.
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Moistens Fast
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HERE'S an easy way for you to keep abreast of NEW developments in materials, equipment, finishes and processes:

Every month you will find listed in the "Ask Purch" Section — Pages 14 to 20, incl., from 75 to 100 new pieces of manufacturers' literature.

MAKE your selection of the literature of interest to you, and which you may need to bring your catalog files up to date.

And, check the numbers on the post-paid postcards on Pages 19 and 20. "Purch" will see that the material is sent to you without cost.

● ●

Ask Purch

Severance CUTTING TOOLS HIGH SPEED CARBIDE

MIDGET MILLS - ¼" Shanks
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TEN LEADERS
MORE THAN 20 SHAPES—EACH IN SEVERAL SIZES

Obtain the best from the originator of GROUND-from-the-Solid

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Practical for use on small grinders, for finishing Patterns, Dies, Parts, etc., in places difficult to reach with the larger Mills.

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Truly REVOLUTIONARY Cutting Tools

Severance LAB MILLS—3/32" Shanks
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These speedy Mills for Dental Laboratories find many uses in Jewelry and in Die and Mold making. Available in 10 popular shapes in 4 or more sizes each, for the finest cutting and finishing. May be reground up to 8 times per 1/32" reduction in diameter.

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HIGH SPEED Out-Perform Dental Burs and Grinding Points

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Complete REGRINDING Service — by New Tool Craftsmen — Savings are thus multiplied —

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Thicknesses from ¼ to ¼ inches. Sheets 40 x 40 inches and larger.

Feeding mix for GARLOCK 7021 into sheeters at Garlock factory.

For Extreme Pressures
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GARLOCK 7021 Compressed Asbestos Sheet Packing was specially developed by Garlock for severe oil service. It is strong and tough, yet resilient. Gaskets cut from GARLOCK 7021 give superior service on pipe lines and other equipment handling gasoline, oil, gas or steam at extreme pressures and high temperatures.

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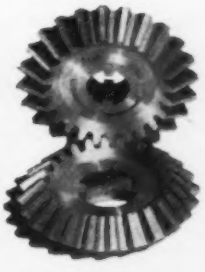
SINCE 1888 . . . We have been making many types and sizes of gears for industry. Vast plant facilities of the most modern gear cutting equipment assure capable handling of your *production* or *special* gear requirements.



HELICAL and BEVEL GEARS—From 1" to 60" in diameter and from 24 DP to 1½ DP.
SPUR GEARS—Size range from ¾" to 150" in diameter. 32 DP to ¾ DP.
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LETTERS . . .

NAVY WANTS IT

An article of unusual interest to the Supply Corps Officers of the Navy appeared in the November 1947 issue of PURCHASING. The article, "Purchasing Profits through Inventory Control", by B. D. Henderson of the Westinghouse Electric Corporation, is considered an excellent discussion of purchasing as it is related to inventory control.

In order that this article may be made available to certain Navy Purchasing and Inventory Control Officers, your permission to reprint it for Navy distribution is requested.

F. W. Corle, Lt. Comdr., (SC), USN
Bureau of Supplies and Accounts
Washington 25, D. C.

Granted.—Ed

STILL IN FOLD

I am happy to report that the assumption made in your letter of December 29 was in error. I am still a very close reader of PURCHASING Magazine even though my personal subscription has expired. I realize that your letter was a form letter, but I certainly wanted to correct any assumption that I would be willing to get along without PURCHASING Magazine.

B. D. Henderson, Pur. Agt.
Westinghouse Electric Corp.
Sharon, Pennsylvania

HIGH LIGHT

It's my "monthly high-light".

James D. Diamond
26 Old Glebe Road
Arlington, Virginia

"BASIC PRINCIPLES"

I have read through a copy of a reprint from PURCHASING entitled, "Basic Principles of Purchasing" by Stuart F. Heinritz. I am wondering if you might send me a copy for my library. I will be glad to accept the copy C.O.D.

I would be glad to receive any lists of recommended reading material to further my education along purchasing lines.

William P. Morgan
538 North Morris Street
Portland, Oregon

Price of "Basic Principles of Purchasing" is $1. Newest book on purchasing is "Purchasing", 656 pages, published by Prentice-Hall, Inc., 70 Fifth Ave., New York, price $5.35. Author is Stuart F. Heinritz.—Ed.

BOUQUET

We consider "PURCHASING" ranks high in informative interest to all Purchasing Agents and is No. 1 magazine in our Department.

E. R. Emerick, Purchasing Agent
U. S. Radiator Corp.
Detroit, Mich.

AND TO YOU, TOO

At the approach of the holiday season our attention is focused on the service rendered by your organization. Please accept our thanks for the courtesies and cooperation extended during 1947.

With the best of wishes for a fruitful and successful future.

Ida M. Cheplowitz, Librarian
Trico Products Corporation
Buffalo 3, New York

The same to you.—Ed.

HANDY REMINDER

Have noted with interest exchanges in "Letters" column of your December issue with Mr. M. L. Pampe, of Armstrong Cork Company, who recommends an index.

Your contents sheet of each issue states "contents are indexed weekly and annually by the Engineering Index Service". If Mr. Armstrong has not already investigated this indexing service, it might help to solve his problem.

Tearing out the contents sheet of each issue and filing it separately from the magazine itself provides a quick reference to refresh memory on an article contained in an old issue. Your article on page 58, December issue, "Photographic Memory", was very interesting. We have run into the same situation several times and found that we could quickly review the contents sheets and spot what we wanted.

George P. Crawford, Jr.
Combustion Engineering Co., Inc.
Chattanooga 1, Tenn.

BRICKBAT

I don't wish to re-order PURCHASING as I don't think its worth it. It's 90% ads and 10% information.

Don Diamond, Pur. Agt.
Bonnot Company
Canton, Ohio

PURCHASING averages 113 editorial pages per issue, which is, we believe, tops for the business paper field. Our advertising volume is about twice that, so we conform closely to the ideal two-to-one ratio. Most of our readers prefer a fat advertising section and tell us frankly that they find the advertising pages as valuable as the editorial. It is publishing experience that the thin books have the most trouble holding readers. Significantly, PURCHASING circulation is now at an all-time high.—Ed.

BOUQUET

I am attaching hereto a letter received in connection with the article "Efficient Purchasing Systems for Small Companies" which appeared in the October issue of PURCHASING.

L. W. Grant, Asst. Pur. Agt.
The F. W. Wakefield Brass Co.
Vermilion, Ohio

"Dear Mr. Grant:

It was with a good deal of pleasure that I read your article "Efficient Purchasing Systems for Small Companies."

It is the small company that really needs help in setting up its various systems, such as purchasing procedures, rather than the big fellow, and it is much too seldom that he gets any help through the medium of magazine articles."

Charles F. Yarham
Ohio Equipment Company, Inc.
Cleveland 14, Ohio

But not too seldom through PURCHASING, which regularly describes successful systems for small organizations.—Ed.

CONTRACT LAW, SIMPLIFIED

Your November issue contained an article "When May a Purchaser Successfully Contest Validity of a Contract" by Leo T. Parker.

For the past few months I have been trying to find a book on contracts that clearly outlines the elements entering into a sound contract. I should like to have one which is not burdened with too much legal terminology. Perhaps this is expecting too much. If you could offer some suggestions regarding such a publication, I should appreciate it very much.

Robt. E. Little, Director of Purchases
North American Rayon Corporation
Elizabethton, Tennessee

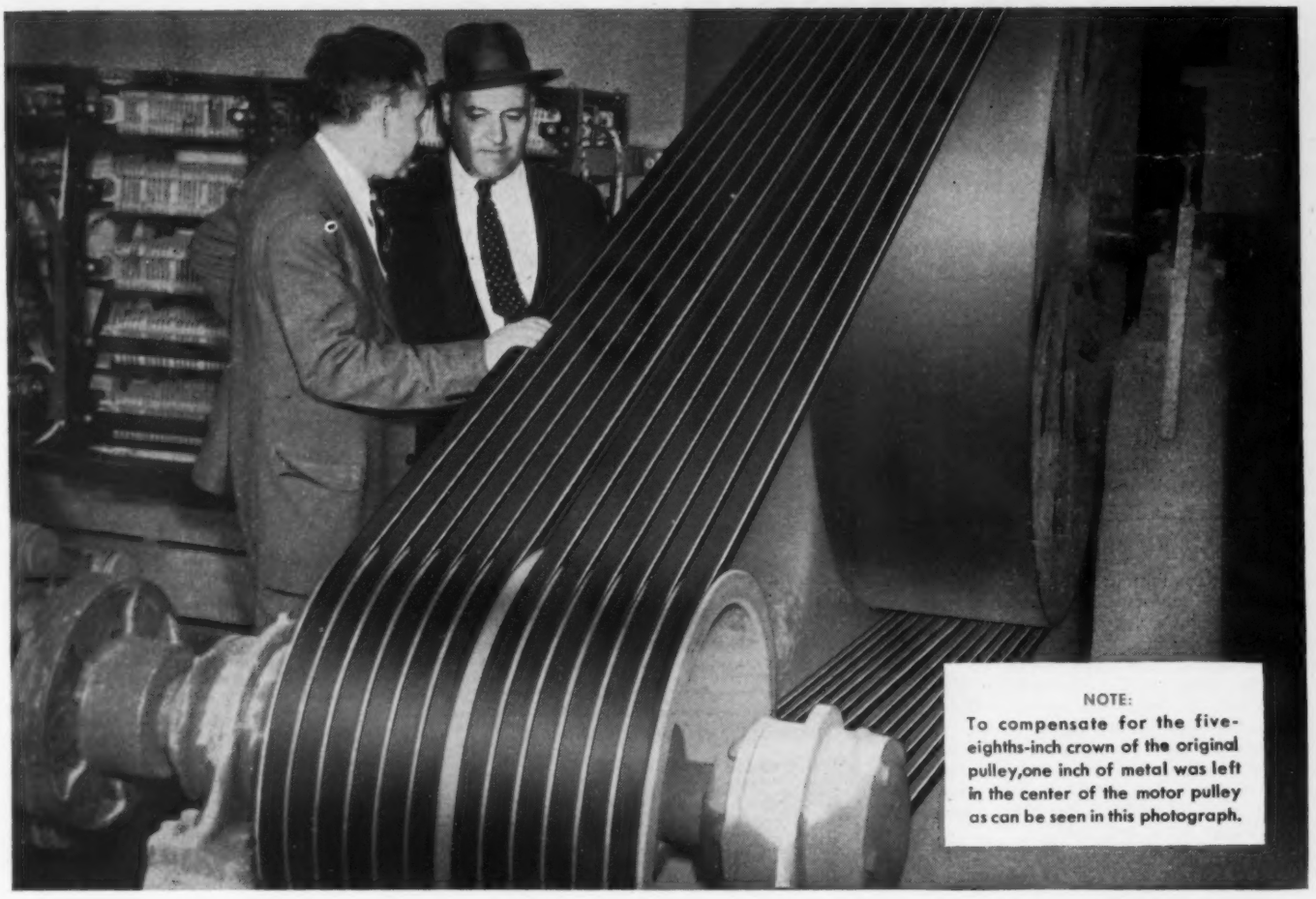
There are any number of books on law for the layman. A recent good one is "Business Law," by Conyngton and Bergh, 600 pages, price $4, published by Ronald Press, 15 E. 26th St., New York. But Leo T. Parker's series on purchase law has dealt repeatedly with the interpretation of contracts, and probably contains more valuable information on this subject, for the purchasing executive, than does any other work. Repeated demand has induced us to reprint much of the Parker series in booklet form, price $1.50.—Ed.

CORRECTION—WITH ORCHID

I appreciate very much the little item appearing under "Personalities in the News", of the January issue of your very fine magazine. However, to keep the records straight I would like to say that I was formerly Purchasing Agent for the Capewell Manufacturing Company of Hartford, Connecticut and am now in the same position with the Gray Manufacturing Company.

While I am writing you, I would like to say that I think your magazine is one of the finest working tools a Purchasing Agent can have.

M. D. Eddy, Purchasing Agent
Gray Manufacturing Company
Hartford 1, Conn.


NOTE:
To compensate for the five-eighths-inch crown of the original pulley,one inch of metal was left in the center of the motor pulley as can be seen in this photograph.

POWER PLANT EXPENSE REDUCED OVER $3,000 ANNUALLY

Boilers and machinery in the power plant of a large Central Ohio clay products manufacturer were badly in need of repairs. To replace worn-out equipment called for large capital expenditures and even with new equipment, estimated operating expenses loomed large. The manufacturer turned to his local Dayton V-Belt Distributor for suggestions. He recommended replacing the original prime mover with a 250-HP electric motor. This eliminated the necessity of replacing and operating the worn-out boilers. Further, though only 13 feet of floor space were available, the Distributor worked out a Dayton V-Belt short-center drive that made use of the original, flat, 8-foot-diameter pulley without removing the 5/8-inch crown.

In the first year of operation, the new motor and drive reduced power plant operating costs over $3,000!

Your own local Dayton V-Belt Distributor can give you similar help with your power transmission problems. With his specialized knowledge he can eliminate nearly 95 per cent of all power drive troubles using standard Dayton V-Belts and the power drive accessory equipment he stocks. If necessary, he can quickly secure the aid of a Dayton power transmission specialist. So, for prompt, profitable solutions to your drive problems call your local Dayton V-Belt Distributor.

THE DAYTON RUBBER COMPANY
Main Office and Factory: Dayton 1, Ohio
Branch Offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, St. Louis.

V-Belt Buyers! A leading mill supply house near you offers specialized Dayton V-Belt service. Look for the name under the trade name heading "Dayton V-Belts" in the yellow pages of your telephone directory.

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THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

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For more than a generation the Superior Manufacturing Company has been producing, by contract, all types of screw machine products. Thoroughly experienced and fully equipped, Superior manufactures precisely to specification. Pieces of the highest standard are delivered on schedule. Make your assembly lines move smoothly. Relieve your distributors of shortage headaches. Let us give you complete information. Just send blueprints, sample parts or drawings for a quotation.

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LUMBER AVAILABLE

New Cut Stock Line Wanted

A national lumber manufacturer is entering the pine and fir cut stock field. Ample lumber supply.

Product and method of distribution have not been determined. If you have an outlet for semi-finished or finished cut stock, write Box 1152, *PURCHASING*, 205 E. 42nd St., New York 17, N. Y.

FOR SALE
WIRE

500,000 lbs.
Black & Galvanized
Catchweight Coils
6 to 20 Ga.

100 Tons
HOT ROLLED ROUNDS
½" to 3⅛" Diameter

IRON & STEEL PRODUCTS, Inc.
43 years' experience
13494-A S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

Available for Immediate Shipment

PRIME STEEL FLATS

35 Tons	.150 x 13 x 65 Plain Hot Rolled SAE 10/75
65 Tons	.250 x 2⅝ x 120 Hot Rolled Pickled & Oiled SAE 10/15
4 Tons	.250 x 11 x 144 Cold Rolled Hard
26 Tons	.340 x 11⅝ x 85 Hot Rolled Pickled & Oiled SAE 10/25
27 Tons	.375 x 4⅝ x 73¾ Hot Rolled Pickled & Oiled SAE 10/10
65 Tons	.454 x 11¾ x 90 Hot Rolled Pickled & Oiled SAE 10/30
98 Tons	.500 x 4" x 240 Plain Hot Rolled SAE 10/40
27 Tons	1¼ x 4¼ x 156 Cold Rolled SAE 10/40

Lafayette Steel Company
9690 Greeley Ave. Detroit 11, Mich.
Townsend 9-8400

Have You Tried Baron Steel Co.?

Steel in Warehouse Stock at Regular Warehouse Price.

BARS — PLATES — SHAPES — SASH — EXPANDED METAL — REINFORCING

Ask to be placed on our mailing list for large detailed stock list issued corrected every two weeks.

BARON STEEL CO.

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PURCHASING AGENT

Buyer of machinery, equipment, construction, and fuels for established Mid-West food processor.

Five years purchasing experience in this field a requisite. Prefer graduate mechanical engineer, age 30 to 45.

Salary commensurate with experience.

A real opportunity in an expanding business for the right man.

Please reply by letter giving details of education and experience with late snapshot if available. All information will be strictly confidential.

Box 1155, c/o *Purchasing*, 205 E. 42nd St., New York 17, N. Y.

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EXPERIENCED BUYER, college grad, age 35, now with large electrical manufacturer, offers his training and experience to that concern which needs a capable Purchasing Agent. Box 1149, PURCHASING, 205 E. 42 St., N.Y.

PURCHASING AGENT, 39, with 10 yrs. technical purchasing experience in manufacturing, contracting and government. Experienced in organizing, planning, expediting and stock control. Engineering background. Box 1150, PURCHASING, 205 E. 42 St., N.Y. 17.

PURCHASING AGENT—47. Thirty years general construction experience; twenty-five years as field and central office Purchasing Agent (materials, rentals, subcontracts) including industrial and architectural buildings, power plants, dams, bridges, highways, residential, etc., in Northeastern section. Experience also includes construction field office management. Box 1146, PURCHASING, 205 E. 42 St., N.Y.

PURCHASING EXECUTIVE—Specialist in Printing, Paper and Office Supplies for past 17 years. Now in charge of 2 million dollar printing purchase program and staff of 30 for international organization. Knowledge of French and Spanish. Will locate anywhere. Box 1147, PURCHASING, 205 E. 42 St, N.Y.

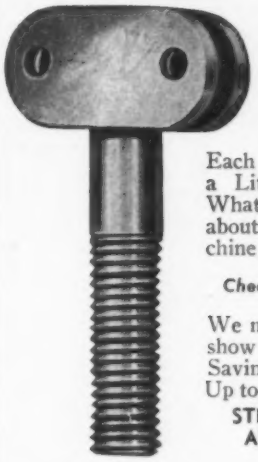
VACUUM PUMP FOR SALE

One Beach-Russ High Vacuum Pump No. 750-D: Motor and required Pulley also available. Condition perfect. Price open.

O'BRIEN'S OF CALIFORNIA, INC.
795 Hedding St. San Jose, Calif.

CLASSIFIED SECTION

SCREW MACHINE PRODUCTS



1913-1947

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We may be able to show you a Real Saving on Parts — Up to 2½" Dia.—In STEEL—BRASS ALUMINUM

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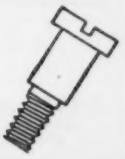

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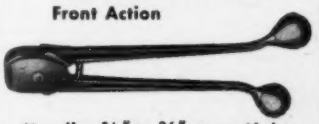

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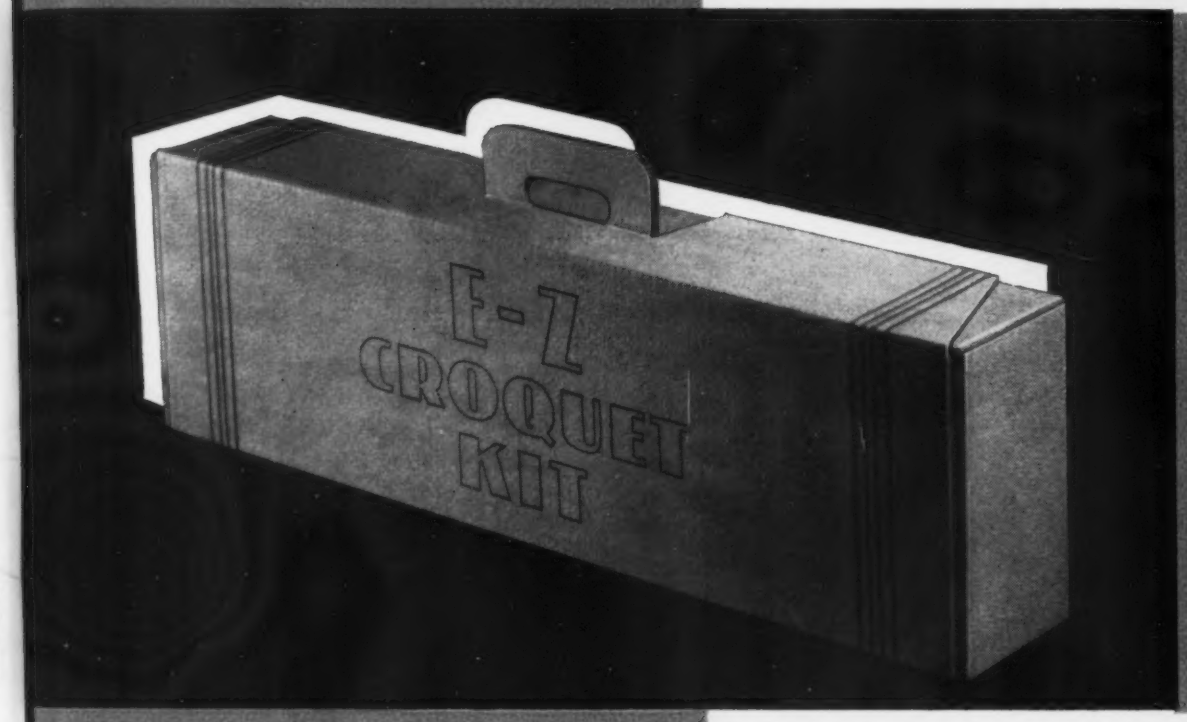

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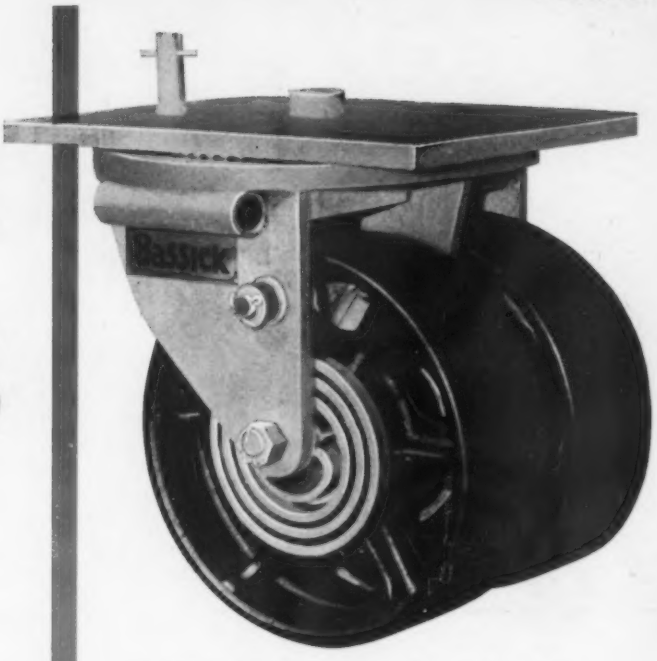

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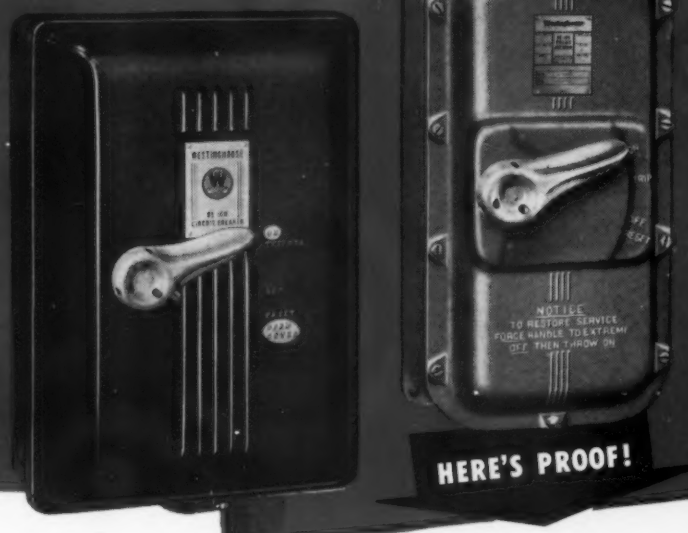

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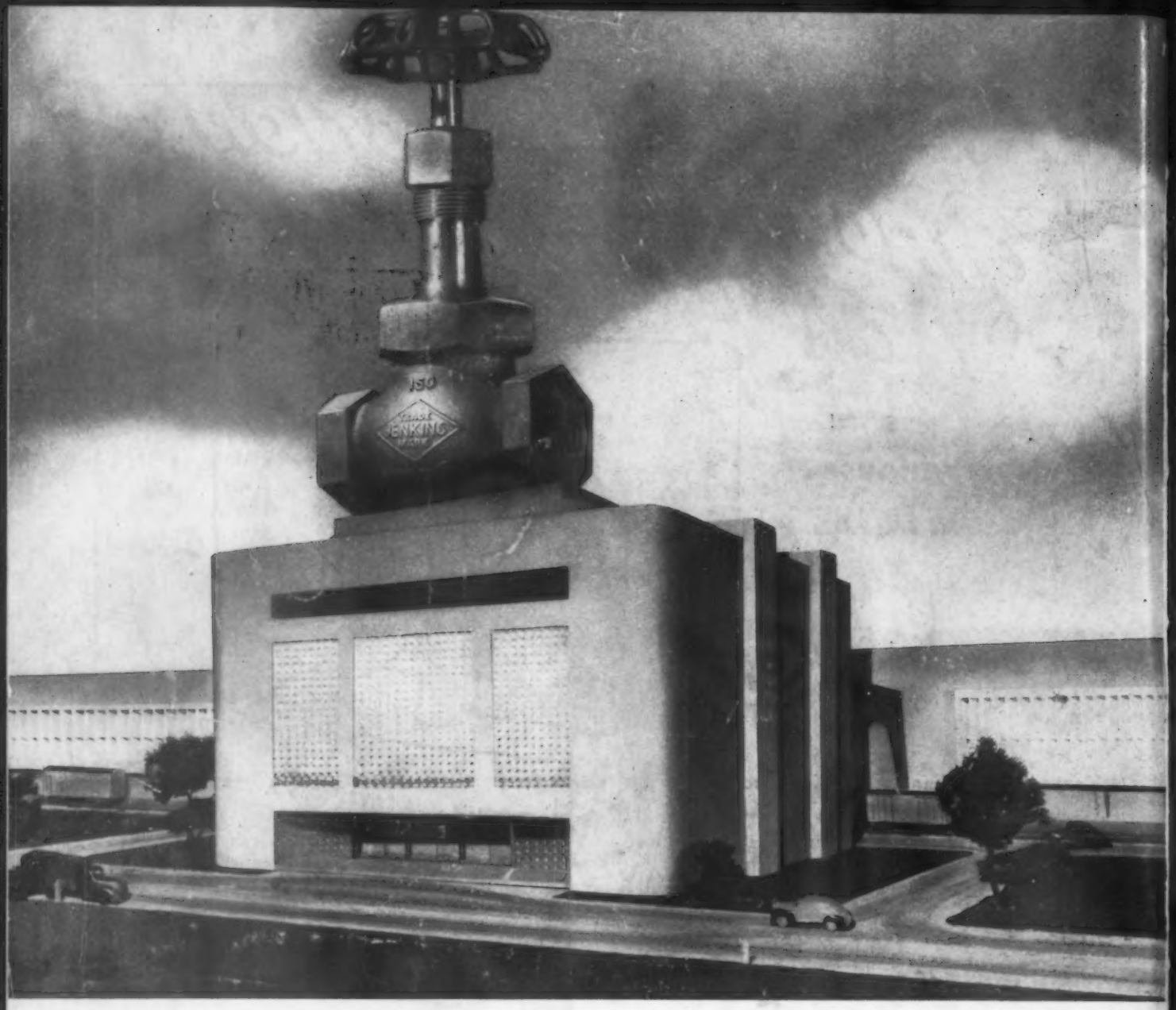

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